

FM 8-50

WAR DEPARTMENT FIELD MANUAL

MEDICAL DEPARTMENT

BANDAGING AND SPLINTING

Alshaw Jr

WAR DEPARTMENT • 15 JANUARY 1944

JAY 674.16414

WAR DEPARTMENT FIELD MANUAL
FM 8-50

*This manual supersedes FM 8-50, 11 September 1940,
including Changes No. 1, 2 October 1943*

MEDICAL DEPARTMENT

BANDAGING

AND

SPLINTING



WAR DEPARTMENT * 15 JANUARY 1944

United States Government Printing Office

Washington: 1944

WAR DEPARTMENT,
WASHINGTON 25, D. C., 15 January 1944.

FM 8-50, Medical Department Field Manual, Bandaging and Splinting,
is published for the information and guidance of all concerned.

[A. G. 300.7 (2 Nov 43).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
Major General,
The Adjutant General.

DISTRIBUTION:

D 8 (10); B 8 (5); R and H (3); R 8 (SH 2, M 10).

(For explanation of symbols, see FM 21-6.)

CONTENTS

SECTION 1

PURPOSE AND SCOPE OF THIS MANUAL

Page
1

SECTION 2

BANDAGING

General	2	Basic Materials	2
Use of Bandages	2	Types of Bandages	2

TRIANGULAR AND CRAVAT BANDAGES

Cravat of Head or Ear	4	Cravat of Elbow	12
Cravat of Jaw	5	Cravat of Knee	13
Cravat Bandage of Eye	6	Cravat of Leg	14
Triangle of Forehead or Scalp	7	Triangle of Foot	15
Triangular Arm Sling	8	Triangle of Hand	16
Shoulder-Armpit Cravat	10	Cravat of Palm of Hand	17
Triangle of Chest or Back	10	Folding Triangular Bandages for Storage and Shipment	18
Triangle of Shoulder	11		
Triangle of Hip	12		

ROLLER BANDAGES

Roller Bandages	19	Four-Tailed Bandage of Jaw	27
Making Rollers	19	Spica of Shoulder	28
Bandage Sizes	19	Figure-of-Eight of Clavicle	29
Rules for Bandaging	19	Velpeau	30
Loose Bandages May Lose Lives	20	Figure-of-Eight of Hand	31
Anchoring the Bandage	20	Figure-of-Eight of Forearm	31
Fastening the Bandage	21	Spiral Reverse of Arm	32
Removing the Bandage	21	Front of Elbow Bandage	32
Recurrent Bandage of Head With One Bandage	22	Oblique Bandage	33
Recurrent Bandage of Head With Two Bandages	23	Spiral Bandage	33
Crossed Bandage of One Eye	24	Figure-of-Eight of Elbow	34
Crossed Bandage of Both Eyes	25	Demigauntlet	34
Bandage of Lower Jaw (Bar- ton Bandage)	26	Gauntlet	35
Four-Tailed Bandage of the Nose	27	Complete Bandage of Hand	35
		Finger Bandage	36
		Recurrent Bandage of Stump	37
		Spica of Foot	38
		Figure-of-Eight of Foot With Heel Exposed	39

		Page
	<i>PLASTER OF PARIS BANDAGE</i>	40
Use	40	Application 41
Preparation	40	
	<i>DRESSINGS</i>	42
General	42	Other Methods of Improvisa-
Purposes and Uses	42	tion 42
Improvised Dressings	42	Procedure 42

SECTION 3

	<i>SPLINTING FRACTURES</i>	44
Leg Splint (Army Hinged, Half-Ring)—Step 1	45	Ankle Hitch Using Two Cravats 54
Leg Splint—Step 2	46	Alternate Method of Securing Splint to Litter With Roller Bandage 56
Leg Splint—Step 3	47	Wire Ladder Splint 57
Leg Splint—Step 4	47	Arm Splint (Thomas, Hinged) 58
Leg Splint—Step 5	48	Board Splint for Fracture of Arm (Humerus) 61
Leg Splint—Step 6	48	Chest Wall as Splint for Fracture of Arm (Humerus) 62
Leg Splint—Step 7	49	Basswood Splint for Fracture of Forearm, Wrist, or Hand 62
Leg Splint—Step 8	50	
Leg Splint—Step 9	51	
Leg Splint—Step 10	52	
Ankle Hitch Using Cravat or Roller Bandage	53	
	<i>IMPROVISED SPLINT AND SLINGS</i>	63
Stick Splint for Fracture of Forearm or Wrist	63	Transportation of Patient With Fractured Spine 66
Coat Flap Used as Sling	63	Litter Securing Strap 67
Shirt Tail Used as Sling	63	
Immobilizing Head for Transportation of Patient With Broken Neck	64	

<i>BALKAN FRAME</i>	68
---------------------	----

<i>INDEX</i>	73
--------------	----

SECTION I

PURPOSE AND SCOPE

OF THIS MANUAL

This manual is a guide to the medical officer and noncommissioned officer concerned with instructing medical department enlisted personnel. Its arrangement will help the instructor organize his own presentation of subject matter. The illustrations will aid in explaining approved procedures as these procedures are being demonstrated. As a reference, the manual is a source of graphic information. The manual's purpose is limited, for it is not intended to provide complete information on the care and treatment of wounds and fractures. Rather, it is intended for use whenever instruction in the various tasks pertaining to the care of casualties and patients touches upon the application of bandages, dressings, and splints. It cannot be too strongly emphasized that the techniques described in the following pages require constant practice if they are to be carried out quickly and correctly.

SECTION II

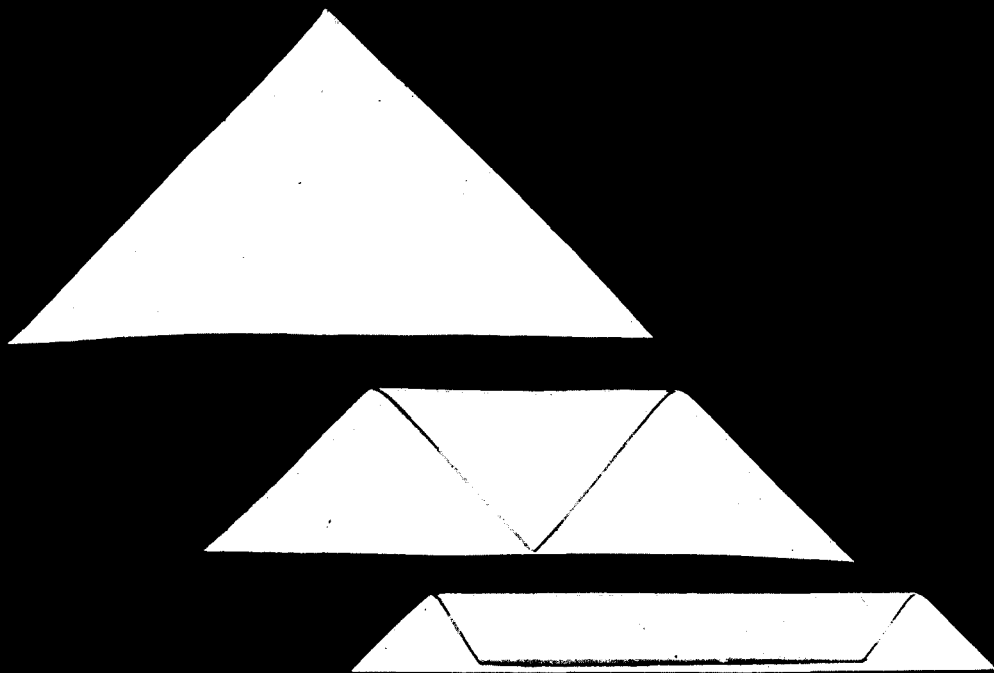
B A N D A G I N G

GENERAL Bandaging is both a science and an art. The proper bandage, properly applied, can aid materially in the recovery of the patient. A carelessly or improperly applied bandage can cause discomfort to the patient and may imperil his life. Thus, it is important that enlisted men of the Medical Department should become familiar with the various bandages and be able to apply them properly. The following pages will aid the student and the teacher; but the art of bandaging can be mastered only by constant practice.

USE OF BANDAGES Bandages are employed to hold dressings, to secure splints, to create pressure, to immobilize (make immovable) joints and in correcting deformity. Bandages should *never* be used directly over a wound. They should *only* be used over a dressing.

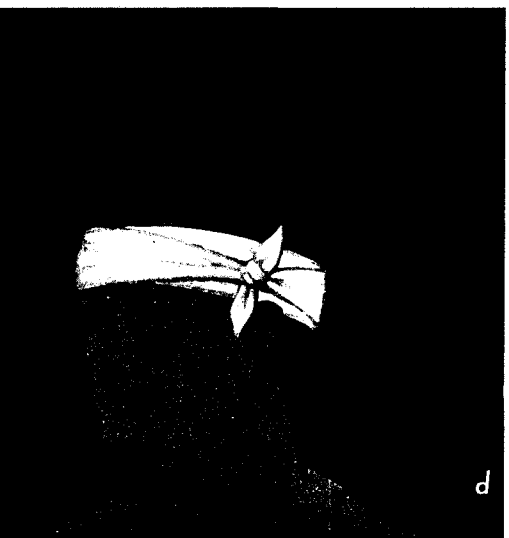
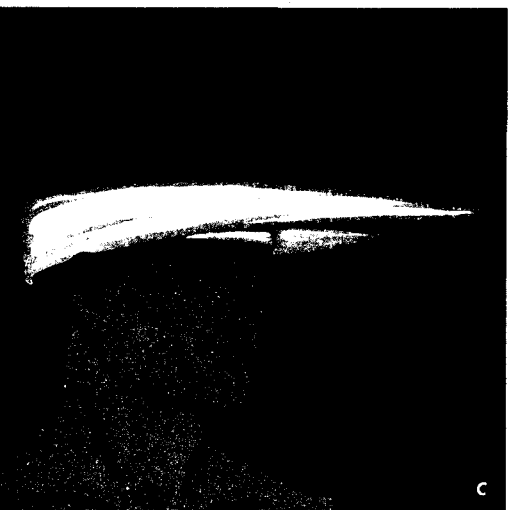
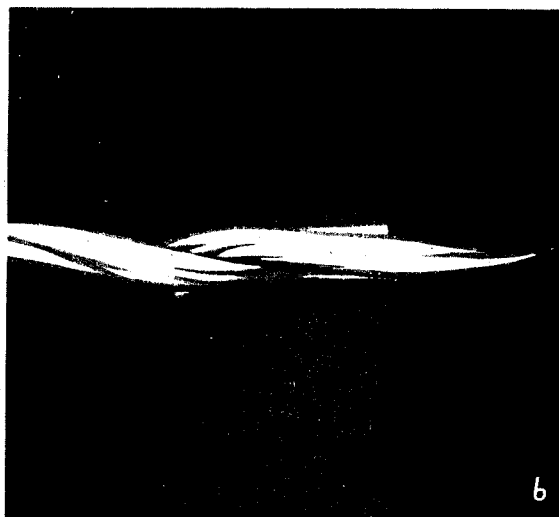
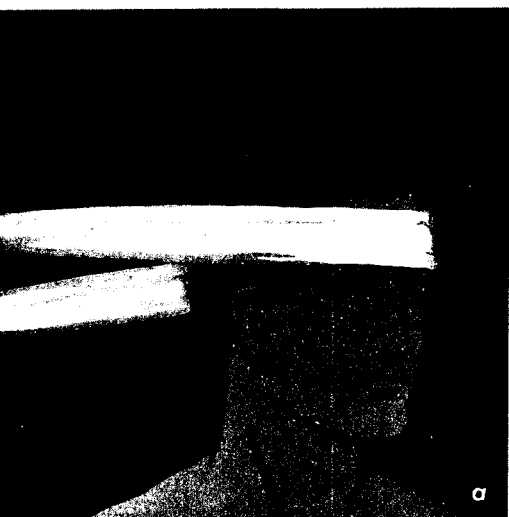
BASIC MATERIALS Various materials, such as gauze, flannel, crinoline, muslin, linen, rubber, and elastic webbing are employed in making bandages. Gauze is used most frequently because it is light, soft, thin, porous, readily adjusted, and easily applied. Flannel, being soft and elastic, may be applied smoothly and evenly, and as it absorbs moisture and maintains body heat, is very useful for certain conditions. Crinoline, rather than ordinary gauze, is used in making plaster of paris bandages, the mesh of the crinoline holding the plaster more satisfactorily than gauze. Muslin is employed in making bandages because it is strong, inexpensive, readily obtainable, and can be used more than once. For the latter reason, muslin bandages are usually employed in bandage practice. Muslin should be soaked in water to cause shrinkage, dried, and finally ironed to remove wrinkles. A large piece of this material may be easily torn into strips of the desired width. Rubber and elastic webbing are used to afford firm support to a part. The webbing is preferable to the pure rubber bandage. It permits the evaporation of moisture.

TYPES OF BANDAGES Bandage material is commonly made into either a triangular bandage, a roller bandage, or a many-tailed bandage. Triangular and cravat bandages are treated first in this section, followed by roller bandages. Correct methods of anchoring and fastening roller bandages are shown in figures 18, 19, 20, and 21.

*Figure 1*

TRIANGULAR AND CRAVAT BANDAGES The triangular bandage, also known as the handkerchief bandage, is used for the temporary or permanent dressing of wounds, fractures, dislocations, etc., and for slings. It is very valuable in first-aid work since it is quickly and easily applied, stays on well, and can be improvised from any kind of cloth, such as a piece of a shirt, an old sheet, a large handkerchief, etc. Unbleached muslin is generally used in making triangular bandages, although linen, wool, silk, etc., will answer the purpose. In making triangular bandages a square of material about 3 by 3 feet, or slightly more, is folded diagonally to make one bandage or may be cut along the fold to make two bandages. The long side of the triangle is called the "base," the point opposite the base is called the "apex," and the points at each end of the base are called the "ends" or "extremities." These bandages may be used either as a triangle or as a cravat, the latter being made from the triangle by bringing the apex to the base and folding it upon itself a sufficient number of times to obtain the width desired (fig. 1). The names of the various triangular and cravat bandages indicate the part of the body to which the bandage is applied. In many of the illustrations of bandages used in this manual, the dressings have been omitted for the sake of clarity.

CRAVAT OF HEAD OR EAR

*Figure 2*

CRAVAT OF HEAD OR EAR
(fig. 2) Used to apply pressure to control serious hemorrhage from wounds of scalp, or for dressing of lower scalp wound. Place middle of cravat over dressing. Pass each end completely around head and knot at side.

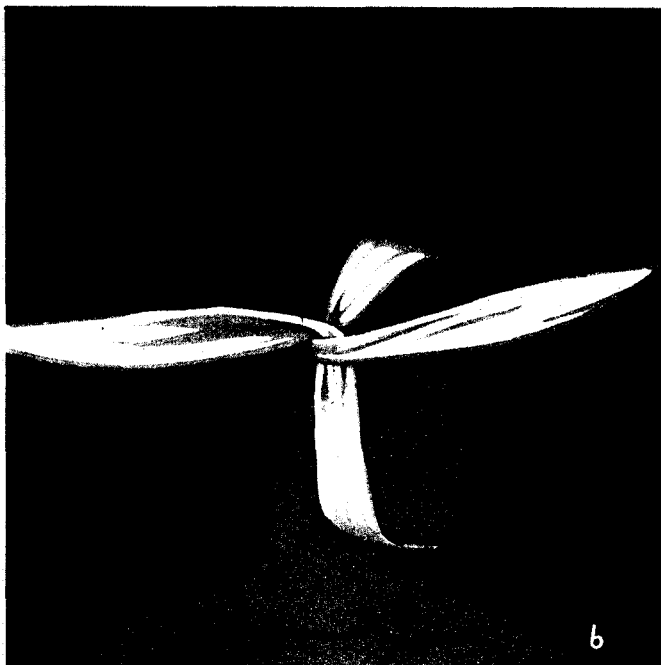


Figure 3

CRAVAT OF JAW (Mento-vertico-occipital cravat) (fig. 3) Used to retain dressings on the chin, cheeks, and scalp, and as a temporary dressing to secure fixation of the parts in a fracture or dislocation of the jaw.

(a) After making triangle into cravat of proper width, place under chin so that one end is longer than other. Carry ends upward in front of ears.

(b) Bring longer end over top of skull. Cross both ends on side of head. Ends should now be of equal length.

(c) and (d) Pass ends around head in opposite directions and tie with square knot in front of other ear, and on primary turn of cravat.

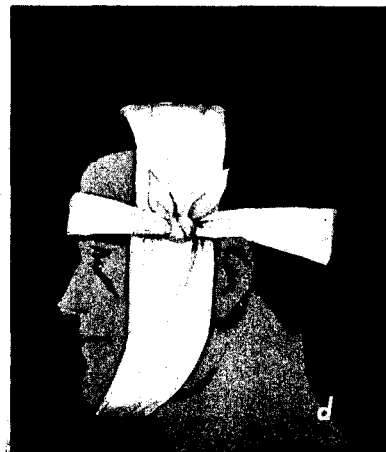
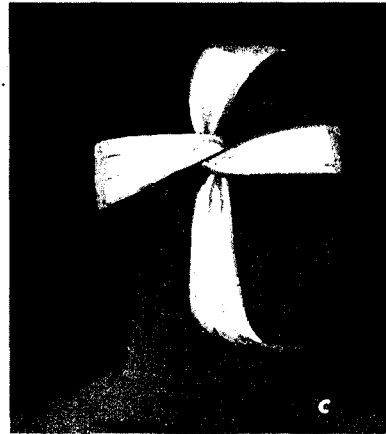




Figure 4

CRAVAT BANDAGE OF EYE
(fig. 4) Used for retention of dressing over eye (two cravats necessary).

(a) Lay center of first cravat over top of head with front end falling over uninjured eye.

(b) and (c) Bring second cravat around head and over injured eye, tying in front and over loose ends of first cravat.

(d) Bring ends of first cravat back over top of head, tying there and pulling first cravat up and away from uninjured eye.

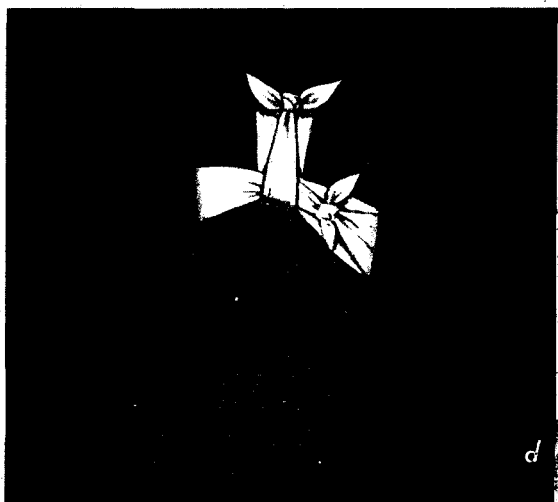
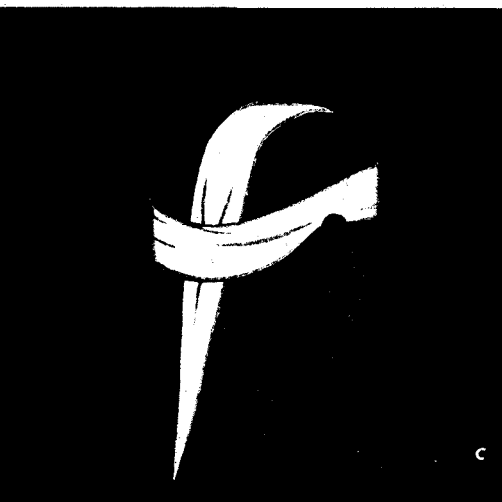
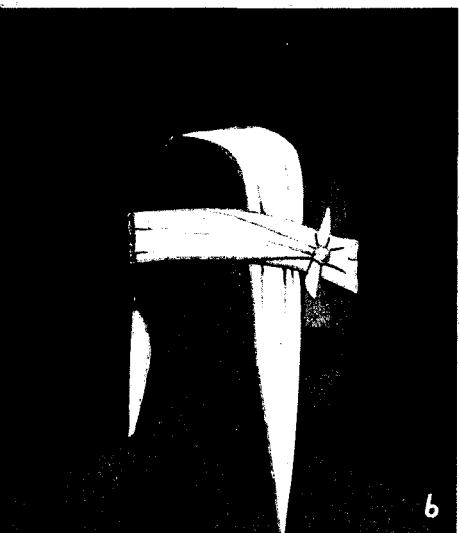




Figure 5

TRIANGLE OF FOREHEAD OR SCALP (fronto-occipital) (fig. 5) Used to retain dressings on the forehead or scalp.

(a) Place middle of base of triangle so that edge is just above eyebrows and bring apex backward, allowing it to drop over back of head (occiput).

(b) Bring ends of triangle around to back of head, above ears, and cross them over apex at occiput.

(c) Carry ends around to forehead and tie them in square knot.

(d) Turn up apex of bandage toward top of head. Pin with safety pin or tuck in behind crossed part of bandage.



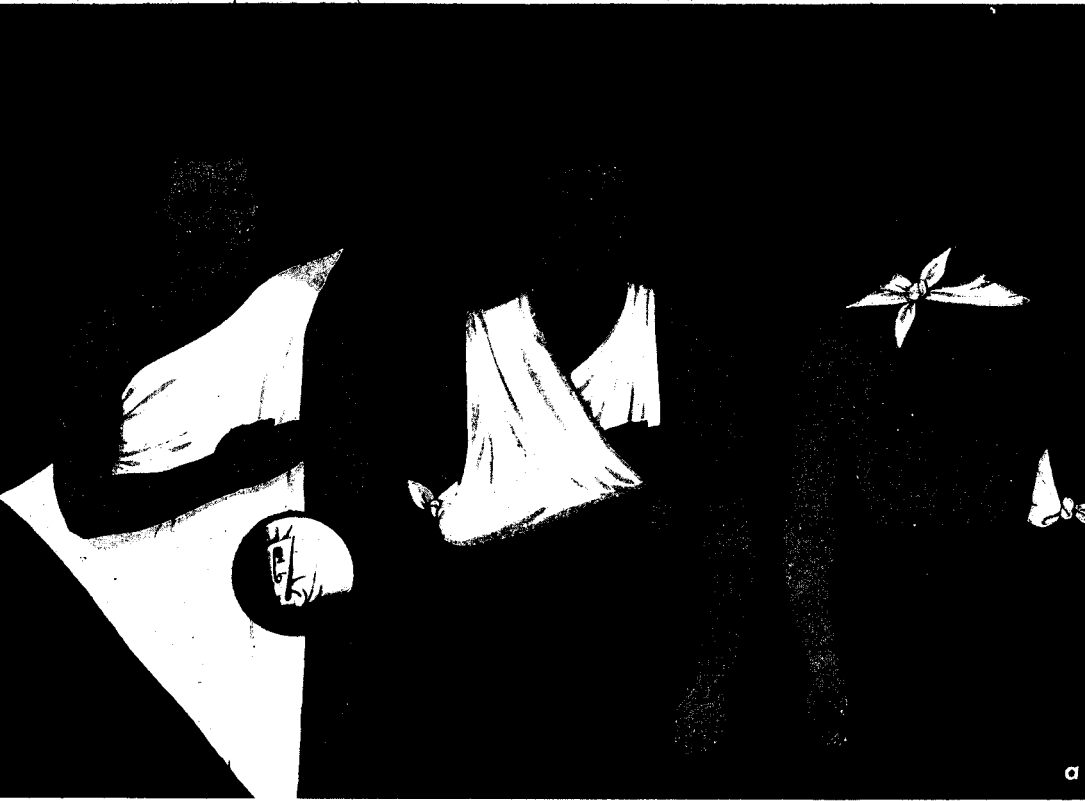


Figure 6

TRIANGULAR ARM SLING (brachio-cervical triangle) (fig. 6) Used for fractures or injuries of hand, wrist, and forearm.

(a) Arm to be put in sling should first be bent at elbow so that little finger is about a hand's breadth above level of elbow. Drop one end of triangle over shoulder on injured side and let bandage hang down over chest with base toward hand and apex toward elbow. Slip bandage between body and arm. Carry lower end up over shoulder on injured side. Tie the two ends, by square knot, at back of neck. Knot should be on either side of neck, *not* in middle, where it could cause discomfort when patient is lying on back. Draw apex of bandage toward elbow until snug, bring it around elbow to front, and fasten with safety pin or adhesive tape. An alternative is to secure apex with a knot as shown in center figure above. Another



b



c



d



e

Figure 6

version of this sling is frequently used where it is desirable to support the forearm, without pressure on the collarbone or shoulder of the injured side.

(b) Start as in (a).

(c) and (d) Pass lower end of bandage *under* injured shoulder. Ends of fingers should extend slightly beyond base of triangle.

(e) Tie ends. Secure apex to sling at elbow by tucking in or with safety pin.

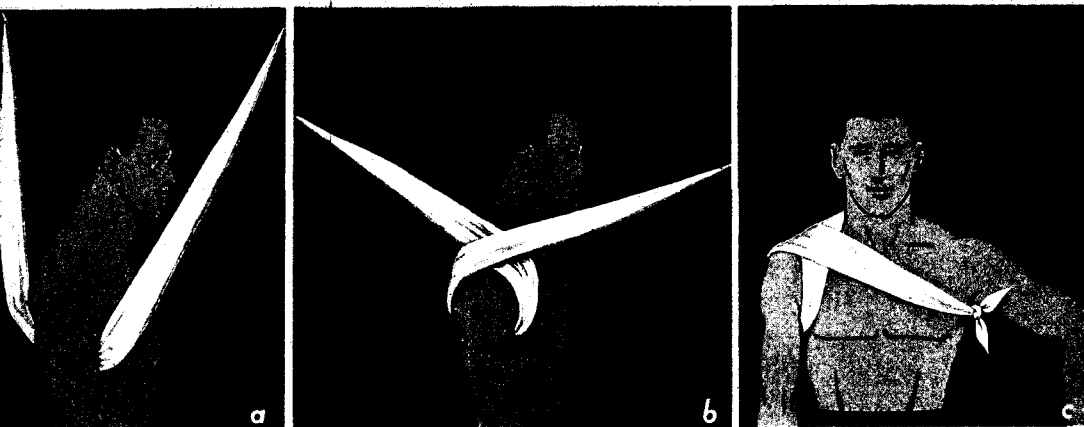


Figure 7

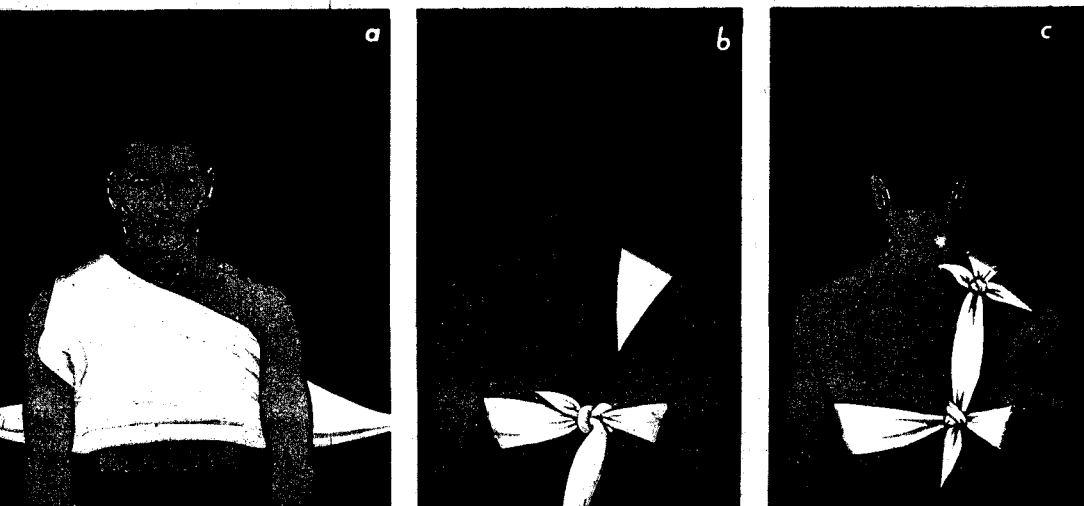
SHOULDER-ARMPIT CRAVAT (bis-axillary) (fig. 7) Used to hold dressings in the armpit (axilla) or on the shoulder.

- (a) Place middle of cravat in armpit over dressing.
- (b) Carry ends upward and over top of shoulder.
- (c) Cross ends and bring them across back and chest respectively to opposite armpit where they are tied.

TRIANGLE OF CHEST OR BACK (fig. 8) Used to retain dressings on burns or wounds.

- (a) Drop apex of triangle over shoulder on injured side. Bring bandage down over chest (or back) to cover dressing and so that middle of base of bandage is directly below injury. Turn up a cuff at base.
- (b) Carry ends around body and tie in square knot.
- (c) Bring apex down and tie to one of ends of first knot.

Figure 8



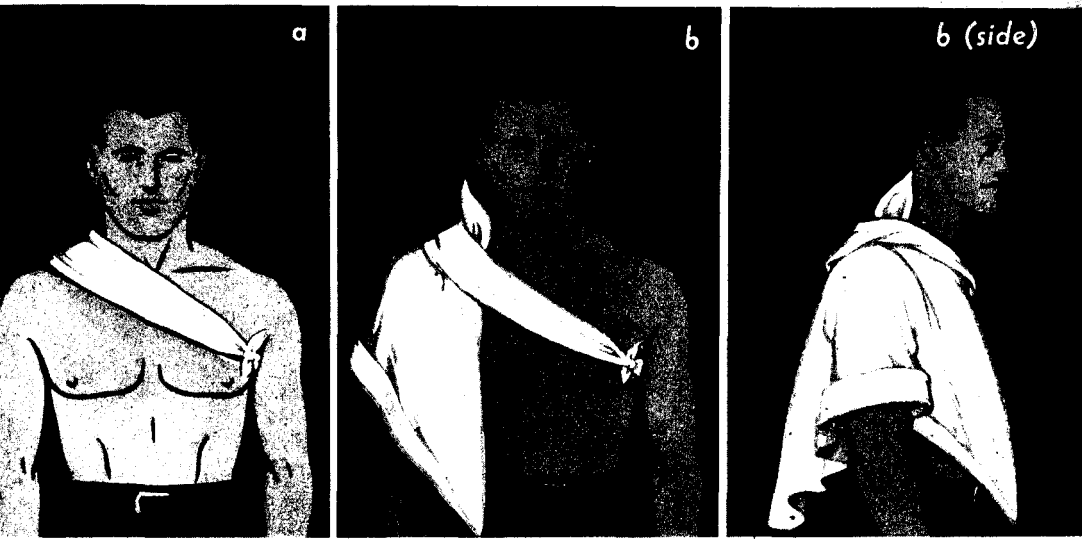


Figure 9

TRIANGLE OF SHOULDER (fig. 9)
Used to retain dressings on shoulder. Requires two bandages, one a triangle, and the other a cravat.

(a) Place center of cravat at base of neck on injured side, and tie just forward of opposite armpit.

(b) Place apex of open triangle under cravat at base of neck and over dressing on injured shoulder and upper arm.

(c) Tuck apex under cravat at neck.

(d) Cross ends of base and tie around arm; secure apex to cravat at neck by tucking in or with safety pin.



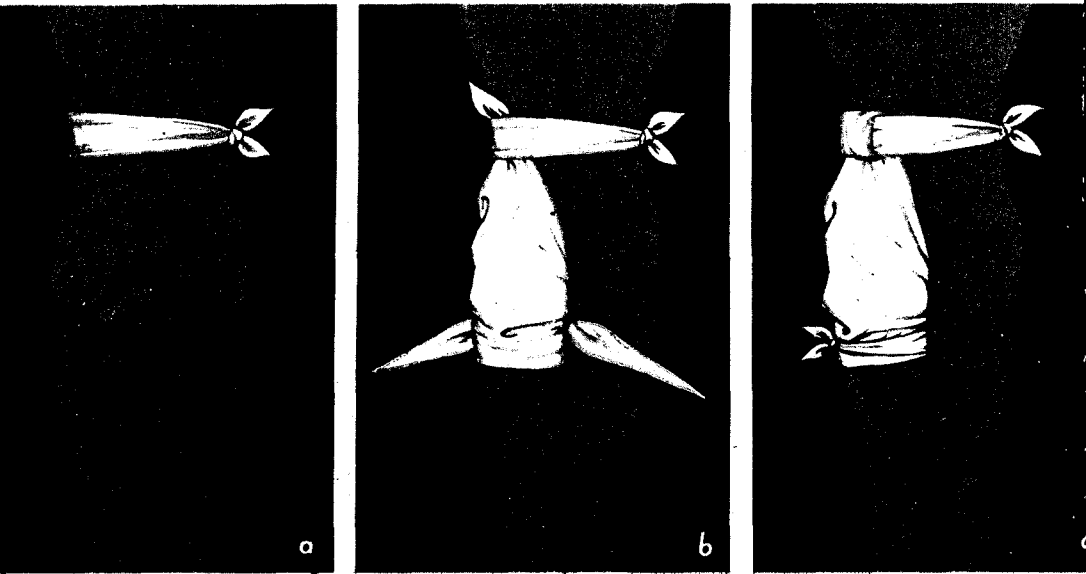


Figure 10

TRIANGLE OF HIP (fig. 10) Used to retain dressings on the buttock or hip. Requires two bandages, one a triangle, and the other a cravat.

(a) Fasten cravat around waist.

(b) Place base of triangle under buttock (gluteo-femoral fold), and apex under cravat at waist. Fold base upward to form cuff. Carry ends of base around thigh and tie with square knot.

(c) Fasten apex to waist cravat with safety pin or by tucking under.

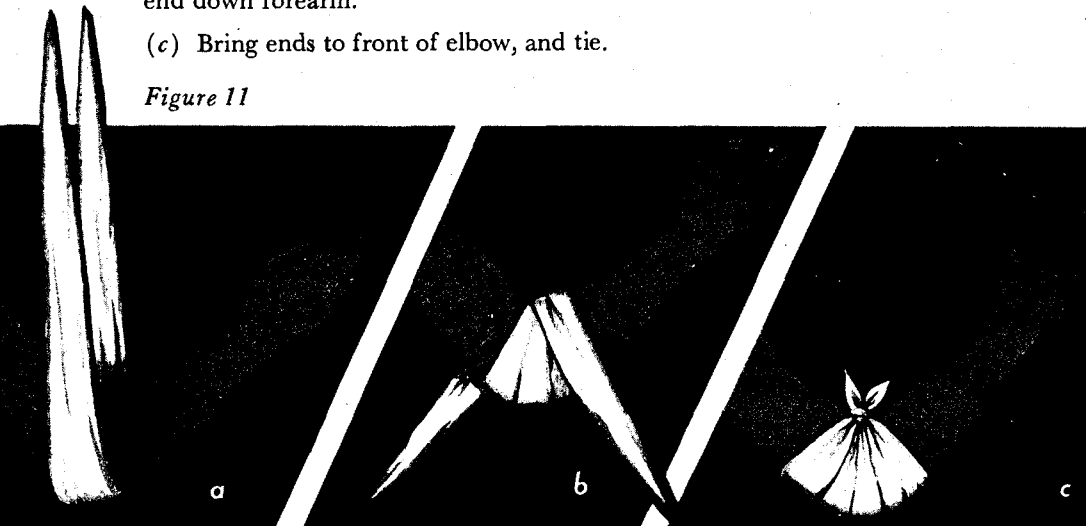
CRAVAT OF ELBOW (fig. 11) Used to retain dressings around elbow.

(a) Place center of cravat under elbow.

(b) Bring ends across each other, top end continuing up arm, and bottom end down forearm.

(c) Bring ends to front of elbow, and tie.

Figure 11



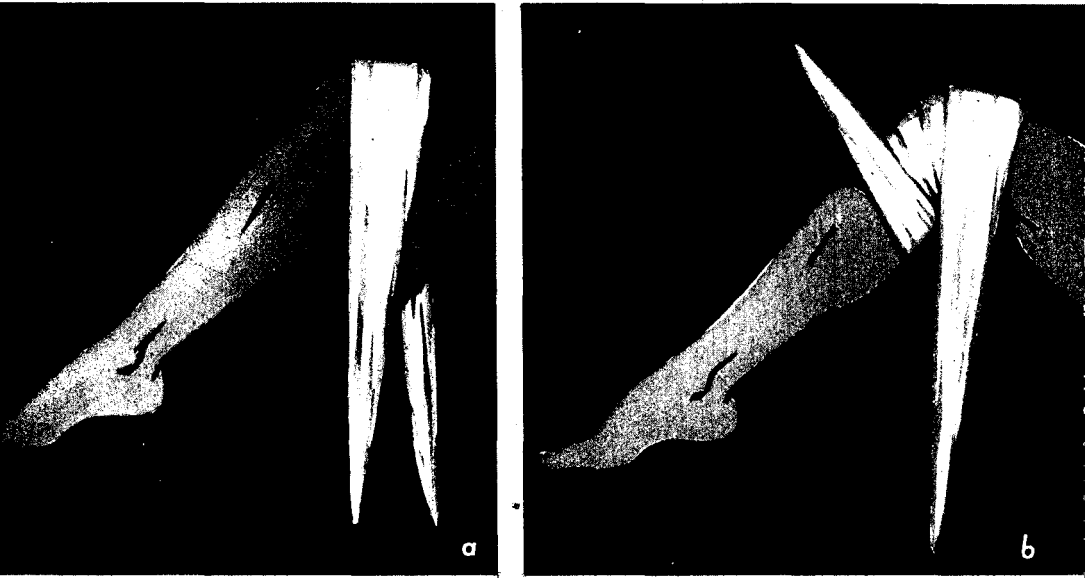
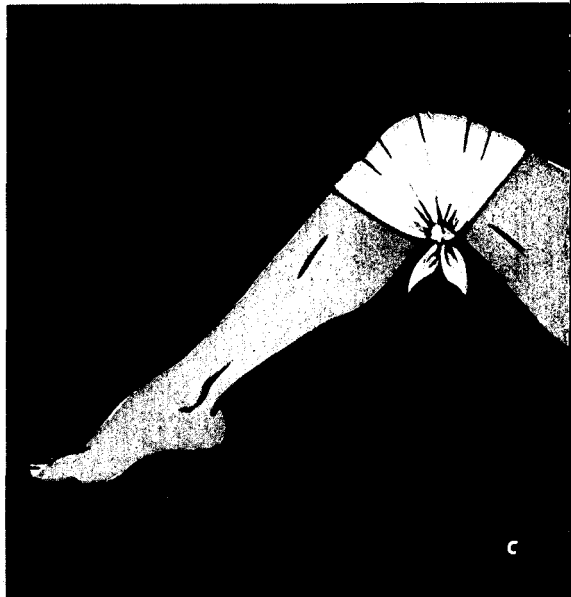


Figure 12

CRAVAT OF KNEE (fig. 12) Used to retain dressings around knee.

- (a) Place center of cravat over center of knee.
- (b) Bring ends down each side of knee and cross underneath, with descending turns down calf, and ascending turns up thigh.
- (c) Bring ends together, and tie on cravat.



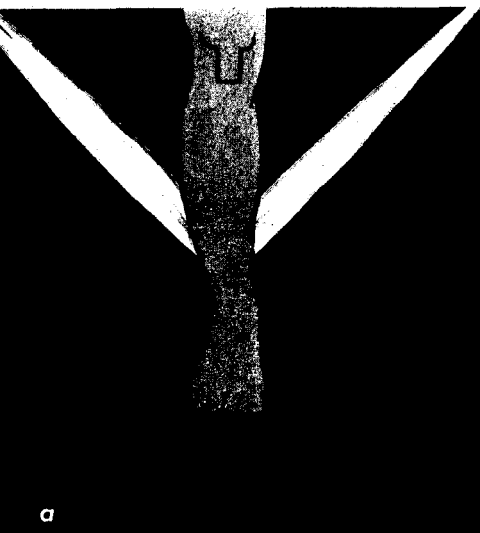


Figure 13

CRAVAT OF LEG (fig. 13)

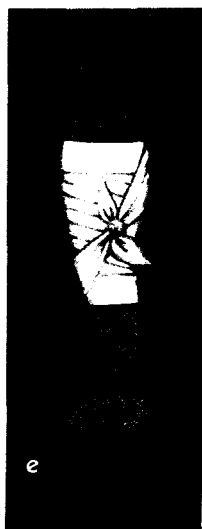
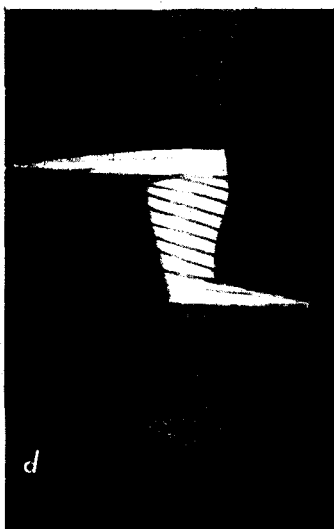
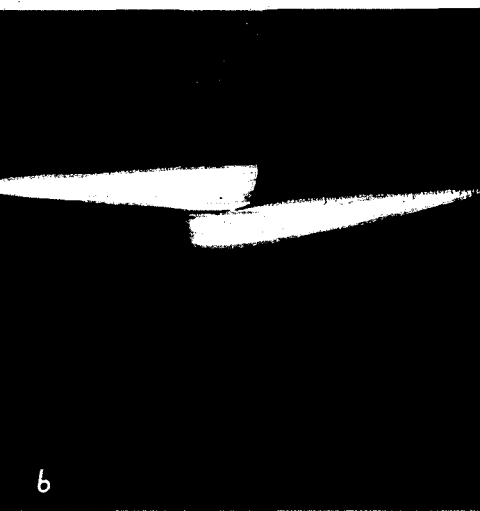
Used to retain dressings on leg.

(a) Place center of cravat at center of calf, with ends forward and up, assuming wound is at about middle of leg.

(b) Cross ends in front, and commence ascending turns with upper end, and descending turns with lower end.

(c) and (d) Each turn covers two-thirds of preceding turn, until dressing is covered.

(e) Terminate by tying both ends over cravat.



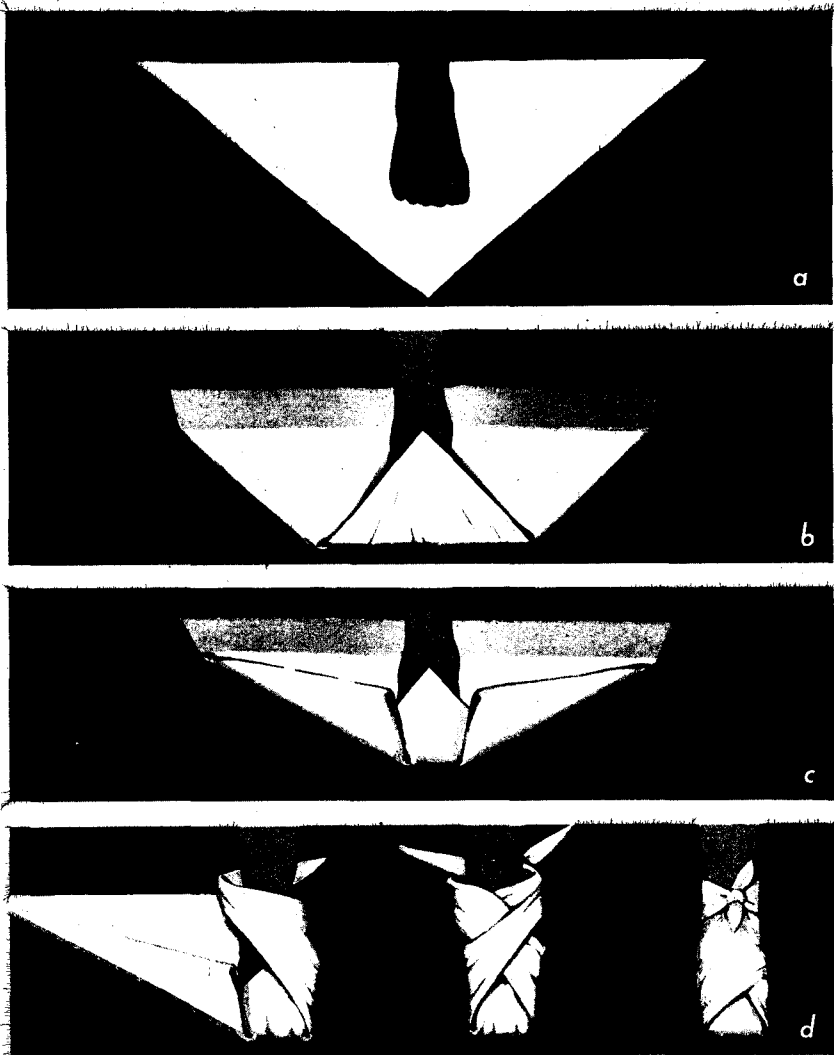


Figure 14

TRIANGLE OF FOOT (fig. 14) Used to retain dressings of considerable size on the foot.

- (a) Center foot upon bandage at right angles to base. Heel should be well forward.
- (b) Carry apex of triangle over toes, and cover back of foot to ankle.
- (c) Tuck excess fullness of bandage into small pleats on both sides of foot.
- (d) Cross each half of bandage toward opposite sides of ankle. Bring ends of triangle around ankle. Tie ends in square knots.

TRIANGLE OF HAND

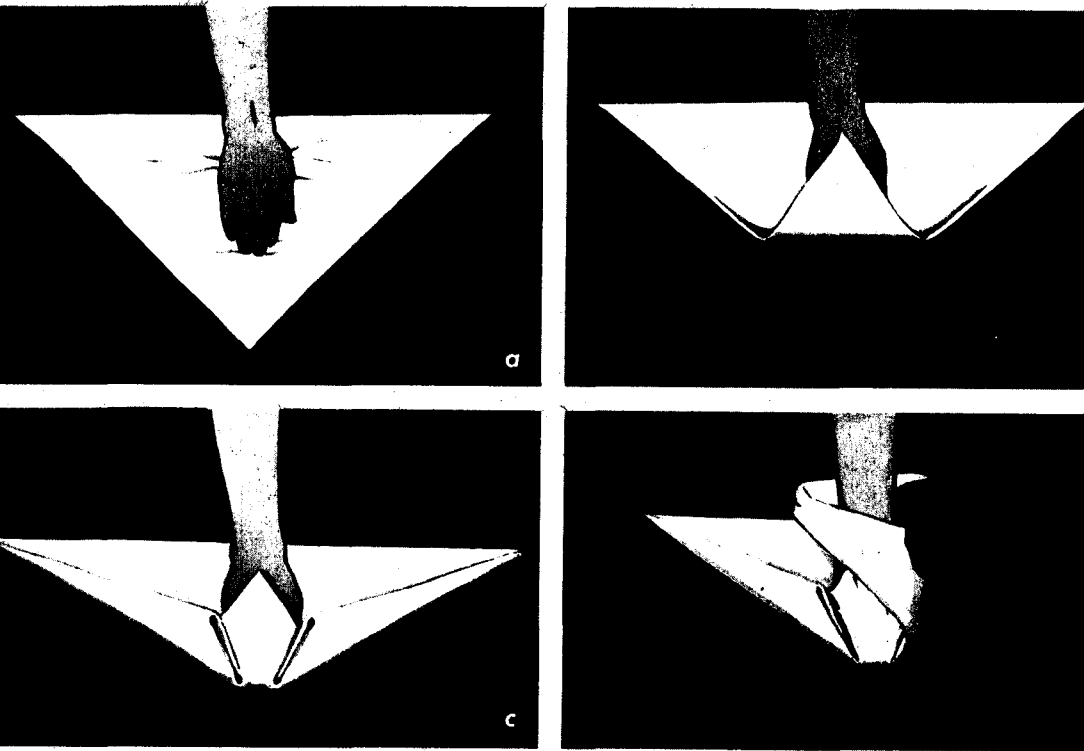


Figure 15

TRIANGLE OF HAND (fig. 15)
Used to retain dressings of considerable size on the hand.

(a) Place middle of base of triangle well up on palmar surface of wrist.

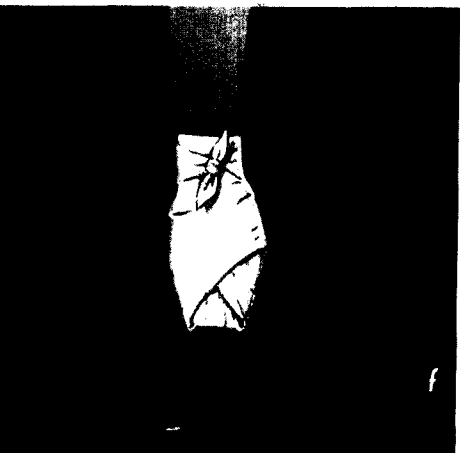
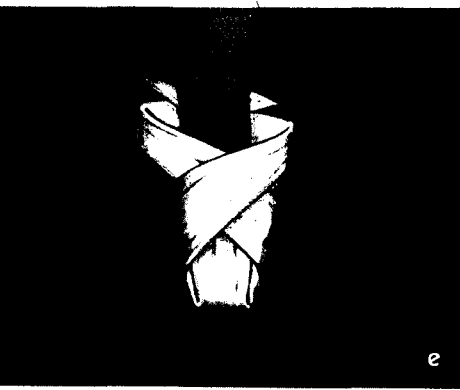
(b) Carry apex around ends of fingers and cover back (dorsum) of hand to wrist.

(c) Tuck excess fullness of bandage into small pleats on both sides of fingers.

(d) Cross each half of bandage toward opposite sides of wrist.

(e) Bring ends of triangle around wrist.

(f) Tie ends in square knot.



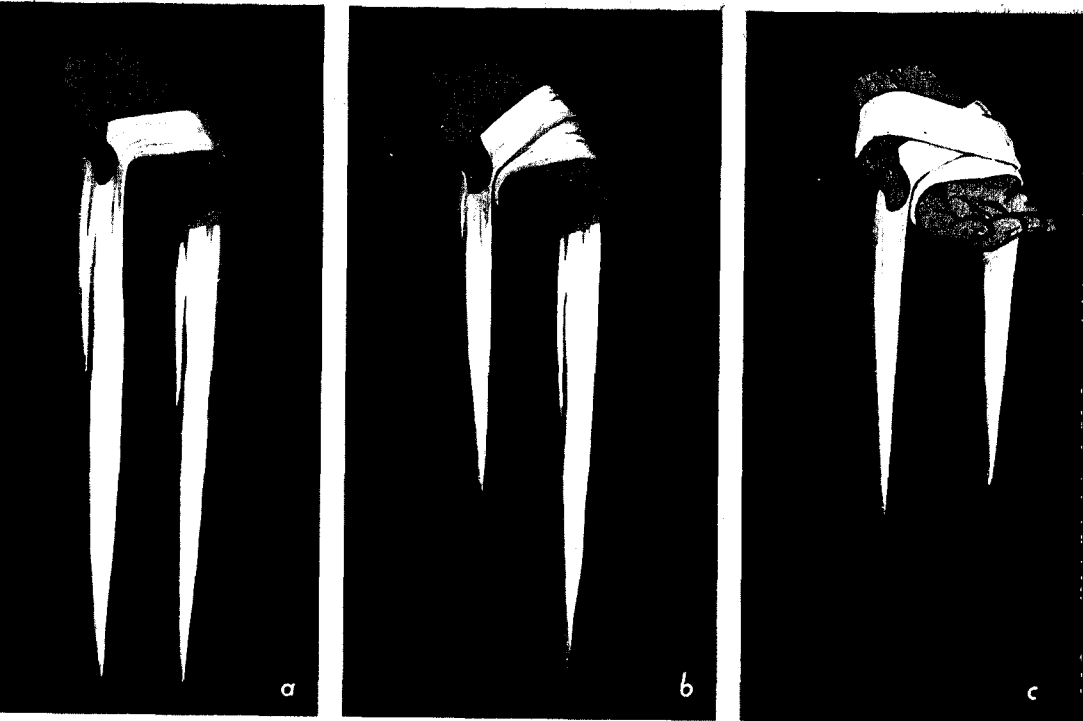


Figure 16

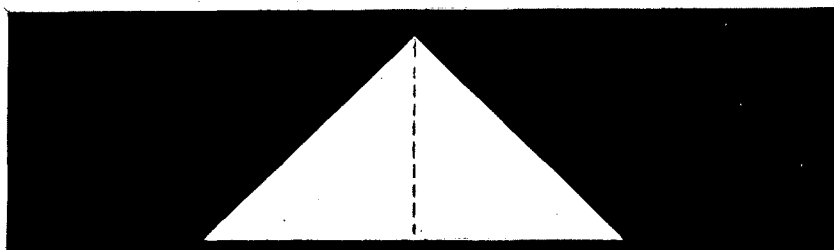
CRAVAT OF PALM OF HAND (fig. 16) Used to retain dressing on palm.

- (a) Lay center of cravat over center of palm with ends down each side.
- (b) Bring first end (at left) under back of hand, over palm, and through hollow between thumb and palm.
- (c) Bring second end (at right) under back of hand, across base of thumb, and diagonally across palm to base of little finger.
- (d) and (e) Cross both ends under back of hand, continue procedure, ends crossing first in back of hand and then in front of palm.
- (f) Tie in front of wrist.

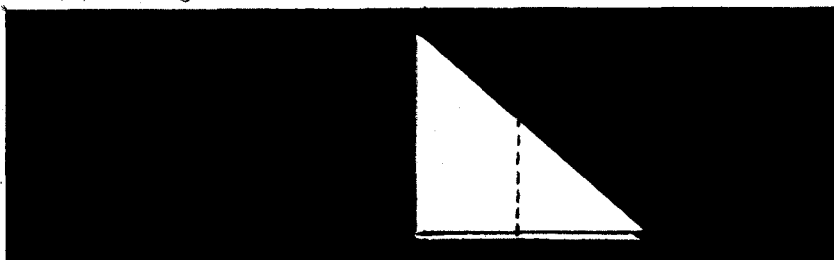


FOLDING TRIANGULAR BANDAGES

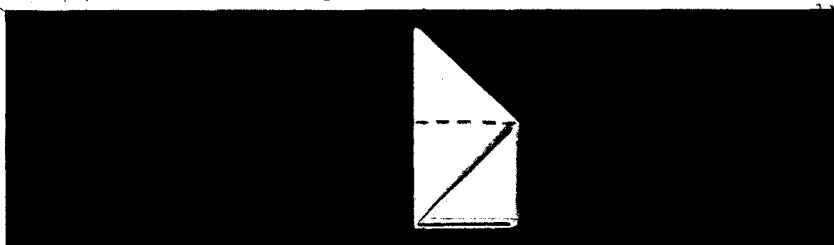
for storage and shipment



(a) Bandage unfolded.

Figure 17

(b) Fold once left to right.



(c) Fold ends right to left.



(d) Fold apex down to form square.



(e) Fold in half, right to left.



(f) Fold down through center.

ROLLER BANDAGES The roller bandage is made from gauze, flannel, muslin, linen, rubber, or elastic webbing, the width and length depending upon the part to be bandaged. For convenience and ease of application, the strip of material is rolled into the form of a cylinder. Each bandage of this type should consist of only one piece, free from wrinkles, seams, selvage, and any imperfections that may cause discomfort to the patient.

MAKING ROLLERS Although there are various types of mechanical appliances used to wind bandages, it is essential that enlisted men be able to roll a bandage by hand. The strip of bandage material is first folded over at one end several times to form a small, firm cylinder. This is then held by its ends with the index finger and thumb of the left hand. As the cylinder is slowly revolved by the left hand, the index finger and thumb of the right hand are used to guide the free end over the cylinder to secure sufficient tension and insure a firm roll.

BANDAGE SIZES The length and width of bandages vary according to the purposes for which they are employed. The sizes most frequently used are 2 inches wide, 6 yards long, for the hand, finger, toe, and head bandages; 3 inches wide, 10 yards long, for extremities; 4 inches wide, 10 yards long, for thigh, groin, and trunk.

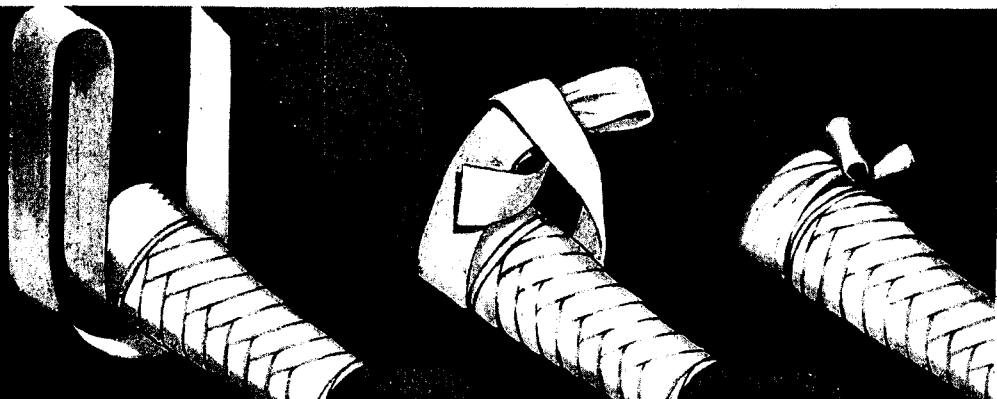
RULES FOR BANDAGING Certain fundamental rules should be followed in bandaging. These rules are the result of bandaging experience over the years and following them will result in bandages that are properly applied and securely fastened. When a roller bandage is being applied, the roll should be held in the right hand so that the loose end is on the bottom; the outside surface of the loose or initial end is next applied to and held on the part by the left hand; the roll is then passed around the part by the right hand which controls the tension and application of the bandage. Two or three of the initial turns of a roller bandage should overlie each other to secure the bandage and keep it in place. In applying the turns of the bandage, it is often necessary to transfer the roll from one hand to the other. Bandages should be applied evenly, firmly, and not too tightly. Excessive pressure may cause interference with the circulation and may lead to disastrous consequences. In bandaging an arm or leg it is therefore advisable to leave the fingers or toes exposed in order that the circulation of these parts may be readily observed. It is likewise safer to apply a large number of turns of a bandage rather than to depend upon a few too firmly applied turns to secure a splint or dressing. This is particularly important in applying a wet bandage, or one that may become wet when holding a wet dressing in place. Shrinkage will tighten up a bandage

*Figure 18*

unduly unless sufficient room is left. The turns of a bandage should completely cover the skin, as any uncovered areas of skin may become pinched between the turns with resultant discomfort. Bandages should be applied in such a manner that skin surfaces are not brought in contact, as perspiration will cause chafing and irritation. In bandaging an extremity, it is advisable to include the whole member (arm and hand, leg and foot), except the fingers and toes, in order that uniform pressure may be maintained throughout. It is also desirable when a limb is being bandaged that the part be placed in the position it will occupy when the dressing is finally completed, as bending will cause changes in the pressure of certain parts of the bandage.

LOOSE BANDAGES MAY LOSE LIVES If bandages become unfastened, wounds may bleed, they may become further infected, and broken bones may become further displaced. Before leaving a patient make doubly certain that all ends are well secured.

ANCHORING THE BANDAGE Always apply initial turns securely, and when possible, around the part of the limb with the smallest circumference. The wrist and the part immediately above the ankle are preferred for anchoring appropriate bandages. The usual anchors consist of

Figure 19

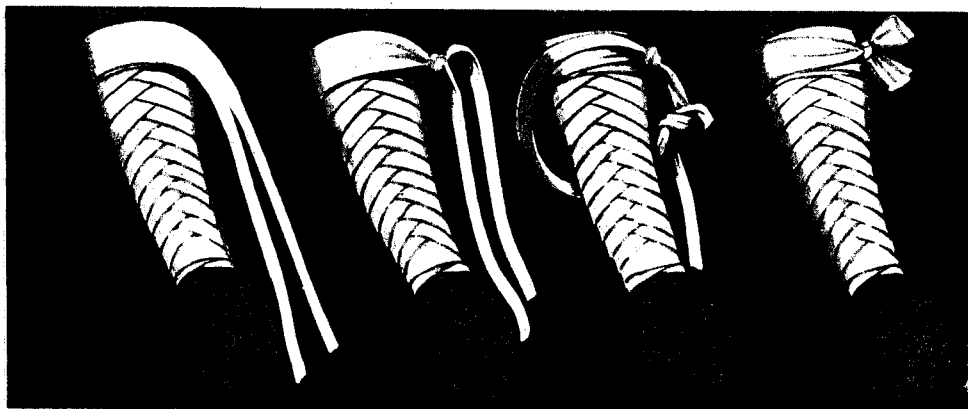


Figure 20

several circular turns overlying each other. A secure wrist anchor is illustrated (fig. 18). Ankle anchors follow the same principles. The bandage end is laid semidiagonally across top of wrist and then brought under wrist, back to starting point. Uncovered triangle of end is bent back over second turn and covered by third turn, completing the anchor.

FASTENING THE BANDAGE Terminate all bandages securely. This is usually done with several overlying circular turns and with ends fastened by tying, safety pins, or adhesive tape. Two methods of tying ends are illustrated. In one (fig. 19) the end of the bandage is split lengthwise for a proper distance and a simple knot tied at the end of the tear. The split ends are then brought around in opposite directions and tied. In the other (fig. 20) the end is simply bent back with a circular turn in the opposite direction, forming two ends which can be tied. The square knot illustrated (fig. 21) is the best knot for tying purposes. It will not slip when pulled from either side, and is easily unfastened.

REMOVING THE BANDAGE Bandage scissors are preferable when bandage is removed by cutting. Interference with underlying dressing and affected area should be carefully avoided. Folds should be gathered up when bandage is merely unwound.

Figure 21



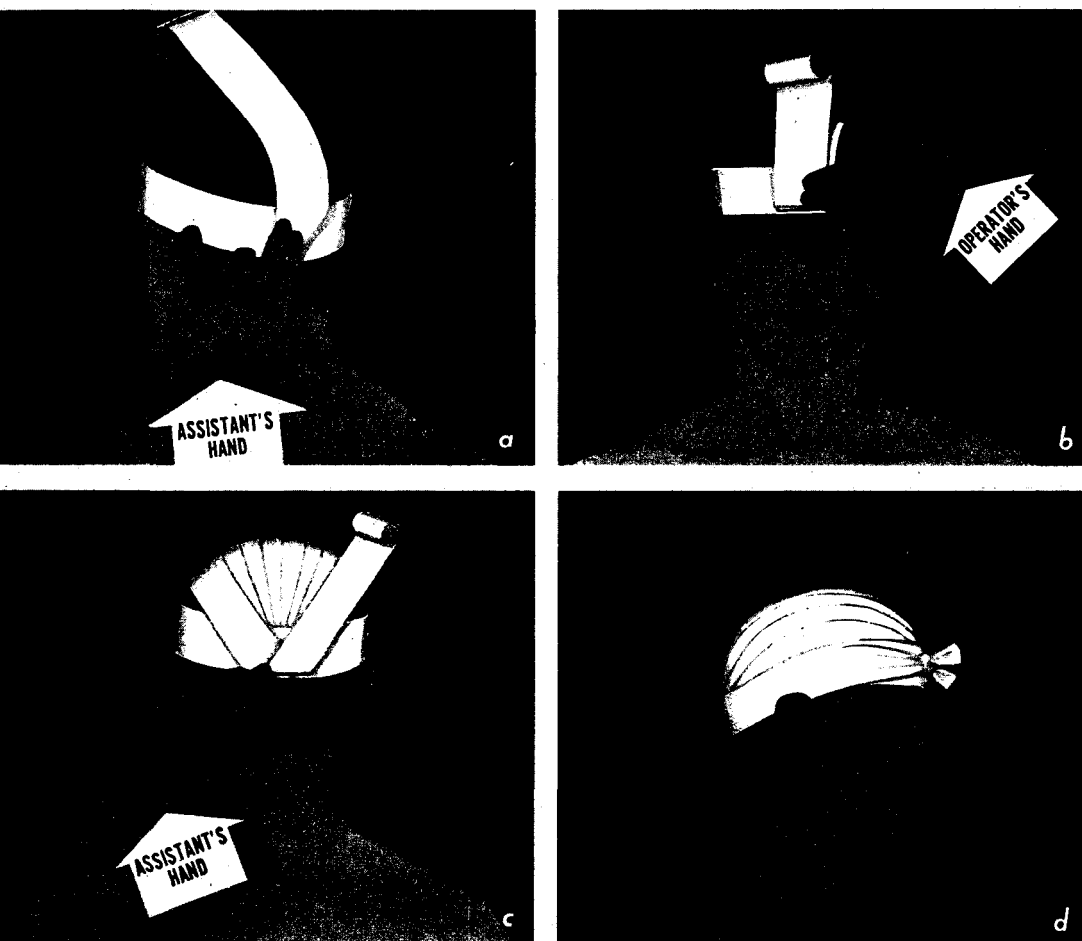


Figure 22

RECURRENT BANDAGE OF HEAD WITH ONE BANDAGE (fig. 22) Used to retain scalp dressings.

(a) Anchor bandage with several turns ending up behind head. At this point bend back bandage, with assistant or patient holding bend in place with two fingers.

(b) Continue bandage over top of head to front of forehead. Bend back bandage at this point and hold it there with free hand. Carry bandage back to point held by assistant at rear of head.

(c) Continue procedure, until entire head is covered, turns alternating to the left and right of the center line, each turn overlying the outer half of the preceding turn.

(d) Terminate with several circular turns around head, covering the ends of the turns at the forehead and back of head. Tie on uninjured side.

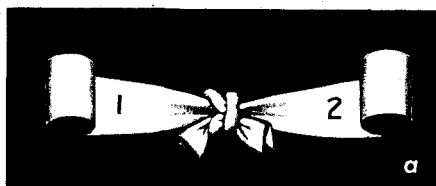
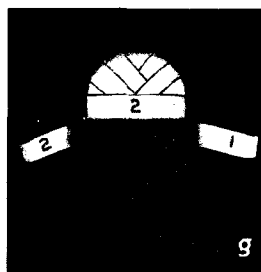
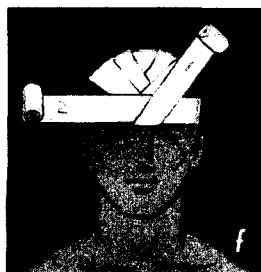
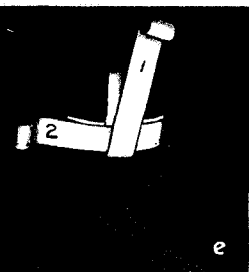
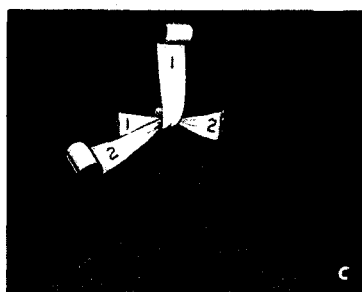
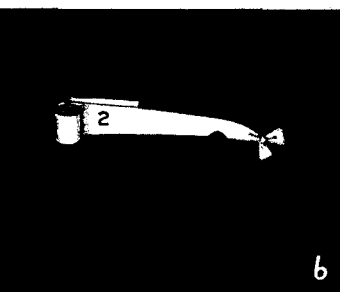


Figure 23

RECURRENT BANDAGE OF HEAD WITH TWO BANDAGES

(fig. 23) Used to retain dressings on scalp wounds when assistant is not available.

- (a) Tie two bandages together with square knot.
- (b) Place knot at back of head and bring both rolls forward above ears.
- (c) Cross bandages at center of forehead, bringing roll No. 1 upwards over center of scalp.
- (d) Bring roll No. 1 over top of head to nape of neck and roll No. 2 around head, over other bandage and around to starting point.
- (e) Bring roll No. 1 from nape of neck over top of head to forehead.
- (f) Bring roll No. 2 over folds of roll No. 1 at forehead juncture, and continue around head to back. Bring roll No. 1 back over top of head and repeat procedure, alternating to the left and right of the middle line, each turn overlying the outer half of the preceding turn.
- (g) and (h) Cover head, bring both rolls to rear with several circular turns around head, and terminate.



CROSSED BANDAGE OF ONE EYE

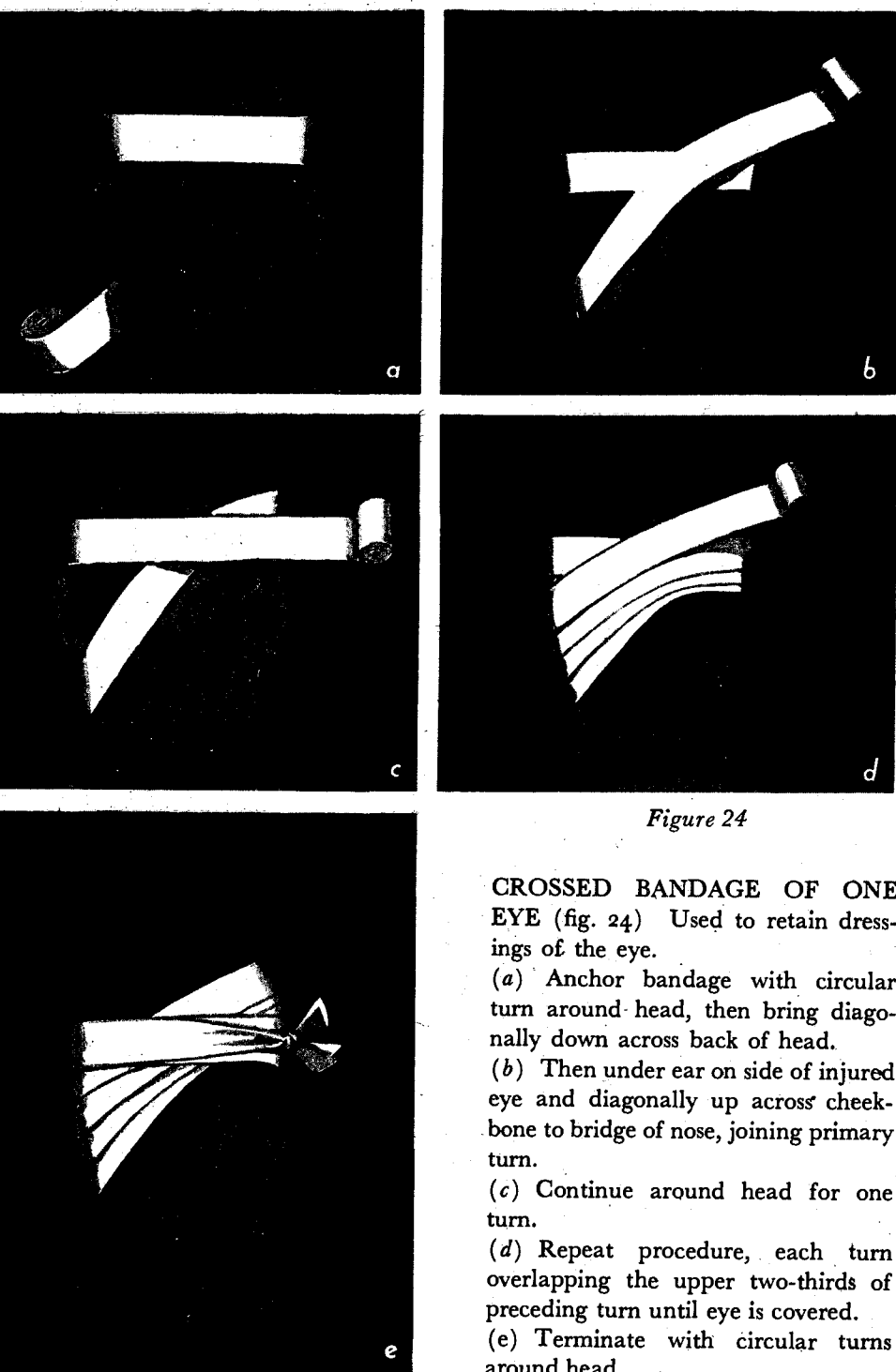


Figure 24

CROSSED BANDAGE OF ONE EYE (fig. 24) Used to retain dressings of the eye.

(a) Anchor bandage with circular turn around head, then bring diagonally down across back of head.

(b) Then under ear on side of injured eye and diagonally up across cheekbone to bridge of nose, joining primary turn.

(c) Continue around head for one turn.

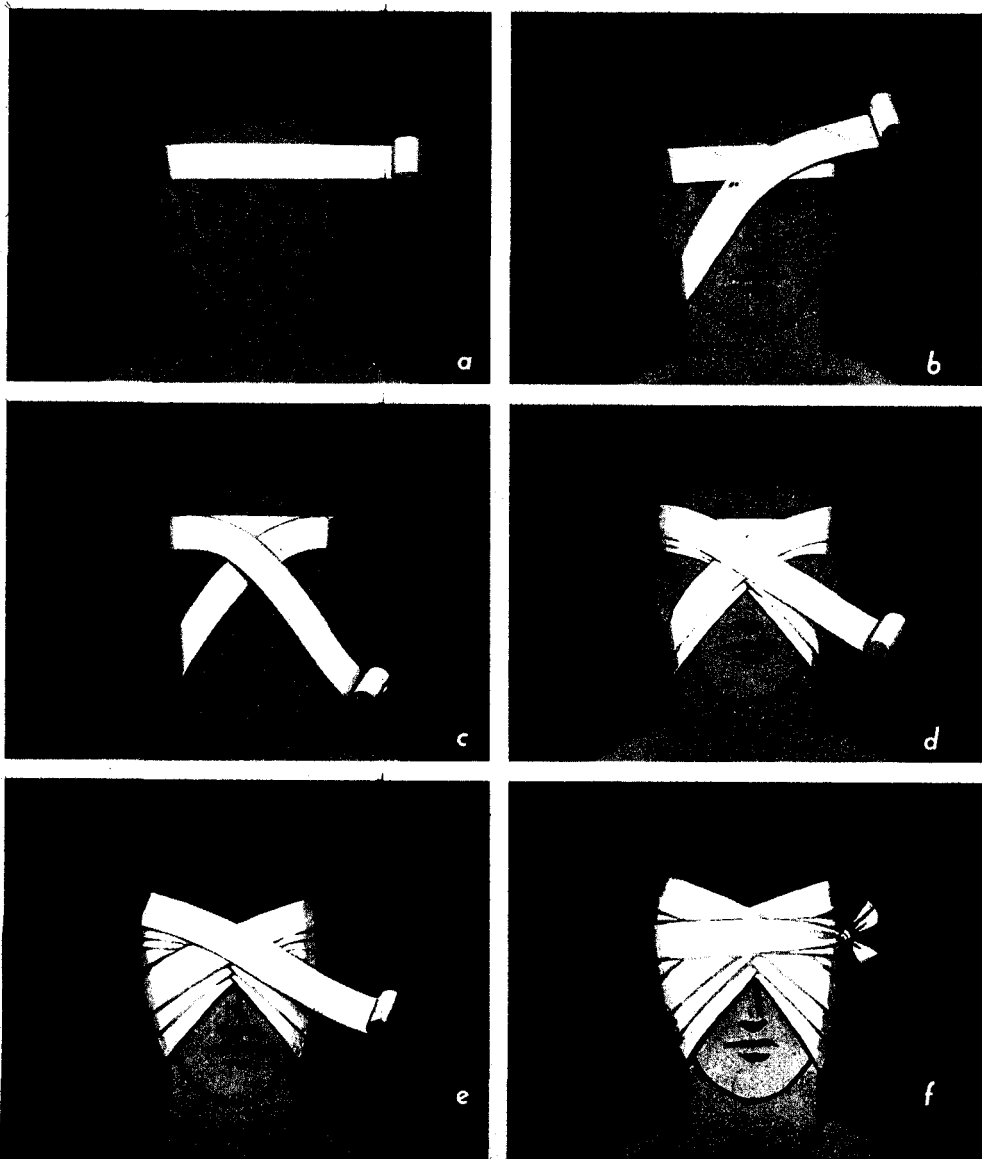
(d) Repeat procedure, each turn overlapping the upper two-thirds of preceding turn until eye is covered.

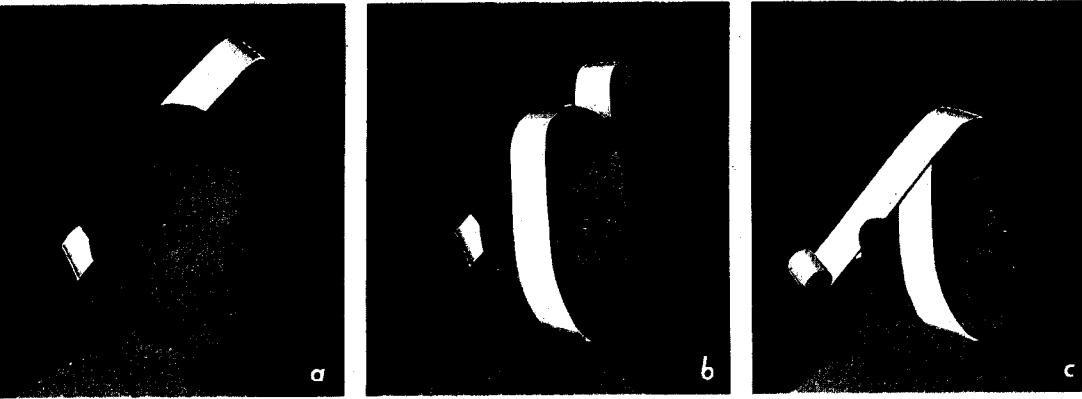
(e) Terminate with circular turns around head.

CROSSED BANDAGE OF BOTH EYES (fig. 25) Used to retain dressings of both eyes.

- (a) Anchor bandage with circular turn around head.
- (b) Continue diagonally down across back of head, under ear, and diagonally up across bone and bridge of nose, joining primary turn.
- (c) Continue around head to forehead, then diagonally down across bridge of nose and cheek to point below other ear.
- (d) and (e) Repeat procedure, each circular turn covering its predecessor, and each diagonal turn overlying upper one-half of two-thirds preceding turn.
- (f) Continue until eyes are covered, and terminate with circular turns around head.

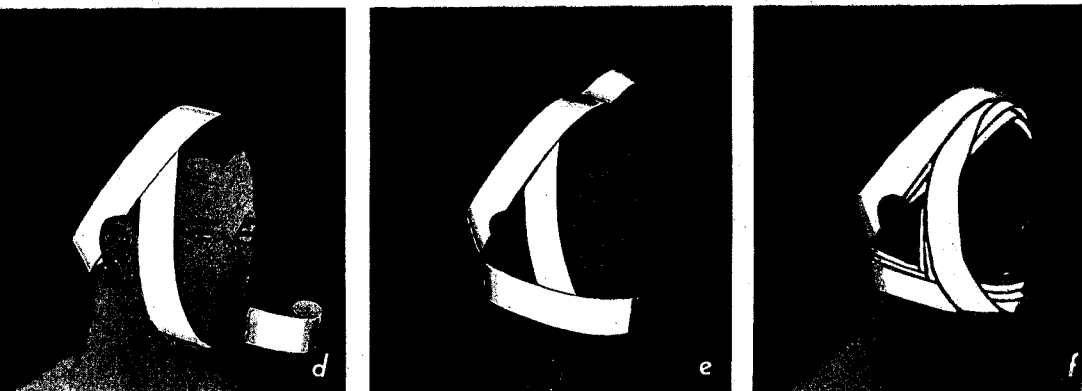
Figure 25

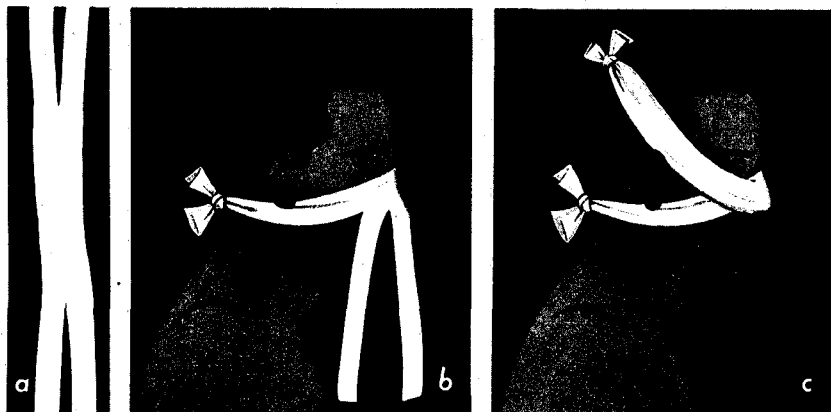


BANDAGE OF LOWER JAW (BARTON BANDAGE)*Figure 26*

BANDAGE OF LOWER JAW (BARTON BANDAGE) (fig. 26.) Used for fracture of lower jaw; also to retain dressings of chin.

- (a) Start bandage behind ear; then bring back of head and diagonally up to crown.
- (b) Continue across top of head, downward in front of ear, under chin and upward in front of other ear to top of head.
- (c) Continue to point of origin.
- (d) Then around nape of neck and side of jaw.
- (e) Then around chin and other side of jaw to nape of neck, repeating the procedure as many times as necessary.
- (f) Repeat procedure overlapping one-third of each underlying layer of bandage, until satisfactory support is obtained.



*Figure 27*

FOUR-TAILED BANDAGE OF THE NOSE (fig. 27) Used for holding dressing around nose.

(a) Bandage of desired length and width is split lengthwise from each end, to points within few inches of the center of the strip.

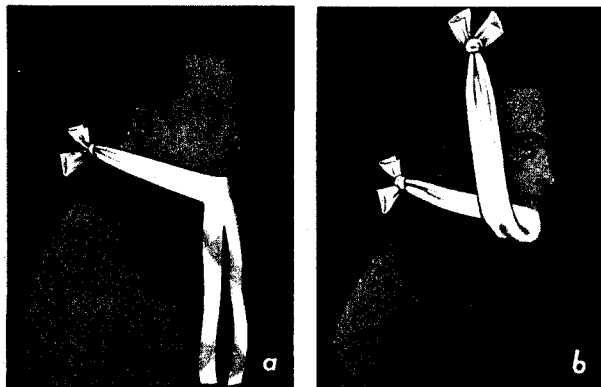
(b) Top of center is placed over nose, with two ends under ears and around nape of neck where they are tied.

(c) Bottom of center piece is placed under nose with other two ends carried above ears to upper back where they are tied.

FOUR-TAILED BANDAGE OF THE JAW (fig. 28) Used for holding dressing on chin or jaw.

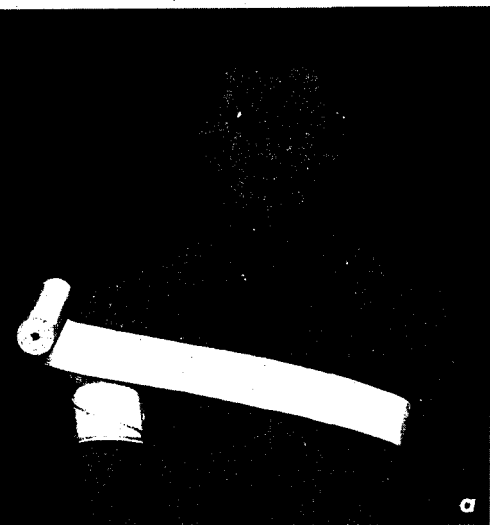
(a) Bandage of desired length and width is split lengthwise from each end, to points within few inches of center of strip. Center is placed on chin, with two ends along jawbone and tied at nape of neck.

(b) Balance of center is folded under chin, with two ends upward across face in front of ears, terminating on top of head.

Figure 28

SPICA OF SHOULDER

Figure 29



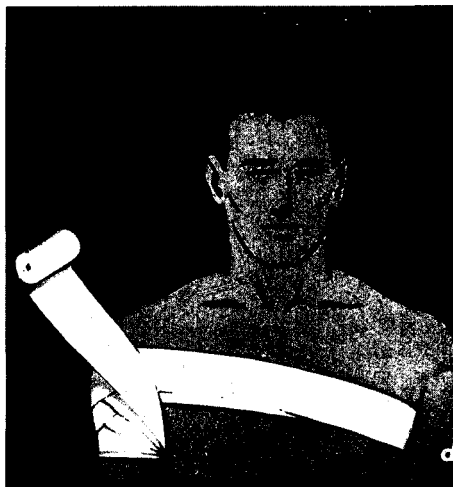
SPICA OF SHOULDER (fig. 29) Used to retain dressings of shoulder and armpit, and dressings of shoulder cap.

(a) and (b) Anchor by two circular turns around upper arm on injured side; carry across back to armpit of opposite side; then across chest semidiagonally to top of primary turns.

(c) Carry around arm under armpit and upward toward shoulder.

(d) Repeat procedure, each turn overlying about two-thirds of preceding turn.

(e) Continue until entire shoulder is covered. Turns should cross in a straight line extending up the center line of arm over point of shoulder.



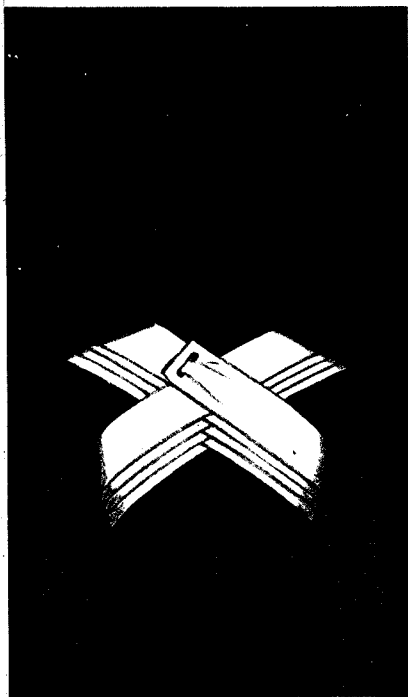
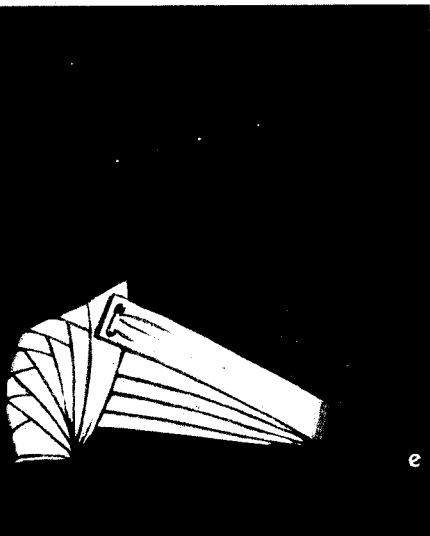


Figure 30



FIGURE-OF-EIGHT OF CLAVICLE (fig. 30) Used to hold shoulders back in fracture of collarbone. Lay end of bandage across shoulder blades, then carry under armpit, over shoulder, across over back, under opposite armpit, over shoulder, and repeat until shoulders are drawn back securely. Tie over one shoulder blade.

Figure 29



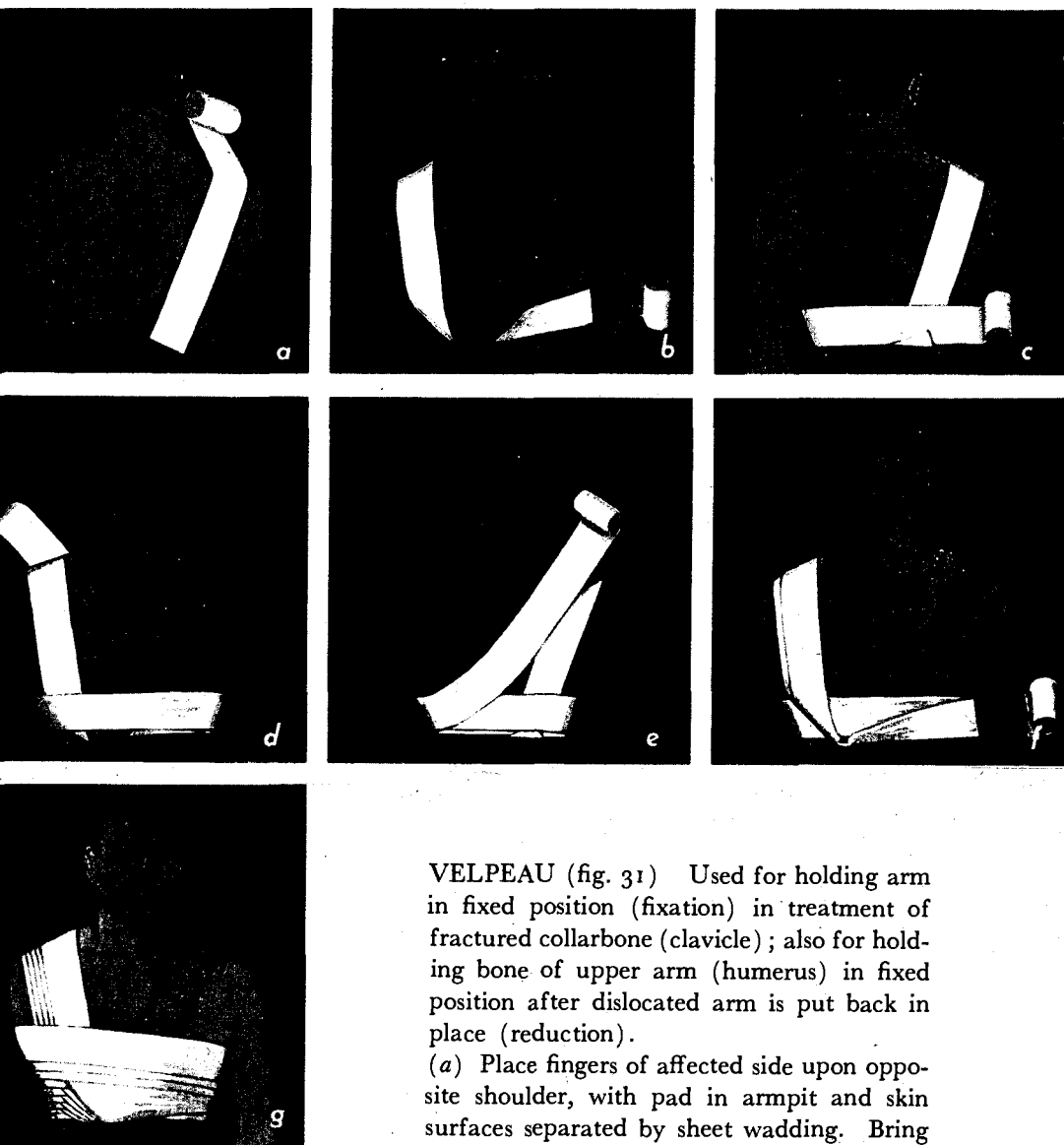


Figure 31

VELPEAU (fig. 31) Used for holding arm in fixed position (fixation) in treatment of fractured collarbone (clavicle); also for holding bone of upper arm (humerus) in fixed position after dislocated arm is put back in place (reduction).

(a) Place fingers of affected side upon opposite shoulder, with pad in armpit and skin surfaces separated by sheet wadding. Bring bandage from waist over affected shoulder.

(b) Continue down across outer part of affected shoulder and upper arm, then under and around waist front.

(c) Continue around back of waist, crossing starting end for anchor.
(d) and (e) Circle waist over bent elbow, and bring diagonally up across back.

(f) Continue as in (b) each turn ascending and overlapping two-thirds of preceding turn.

(g) Terminate with circular turns over arm, forearm, and chest.

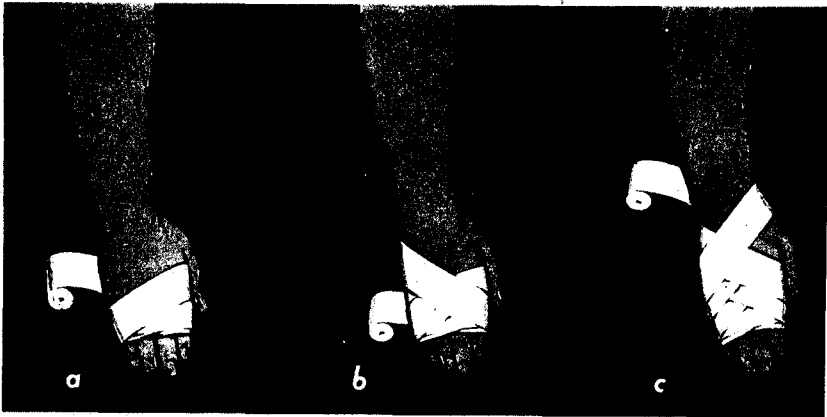


Figure 32

FIGURE-OF-EIGHT OF HAND (fig. 32) Used to retain dressings on back of hand or in palm.

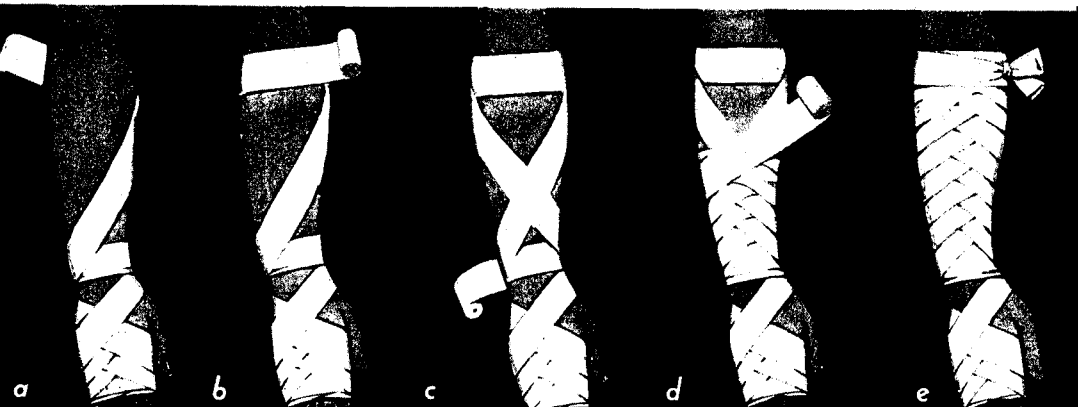
(a) Anchor bandage on hand; carry diagonally across back of hand to thumb; then across palm to back of hand.

(b) Carry diagonally across back of hand to bottom of primary turn and across palm.

(c) Follow with several similar turns, each one overlying about two-thirds of preceding turn on back of hand. After sufficient turns, terminate with circular turns around wrist.

FIGURE-OF-EIGHT OF FOREARM (fig. 33) Used to retain dressings and for covering splints on forearm. This may start as continuation of figure-of-eight of hand, or with primary circular turns of wrist. (Illustration shows continuation of figure-of-eight of hand.) Carry spirally upward around forearm. Apply circular turn just below elbow. Then carry spirally downward around forearm forming X with upward turn. Repeat procedure, each turn overlapping one-half or two-thirds of preceding turn. When forearm is covered, terminate below elbow.

Figure 33



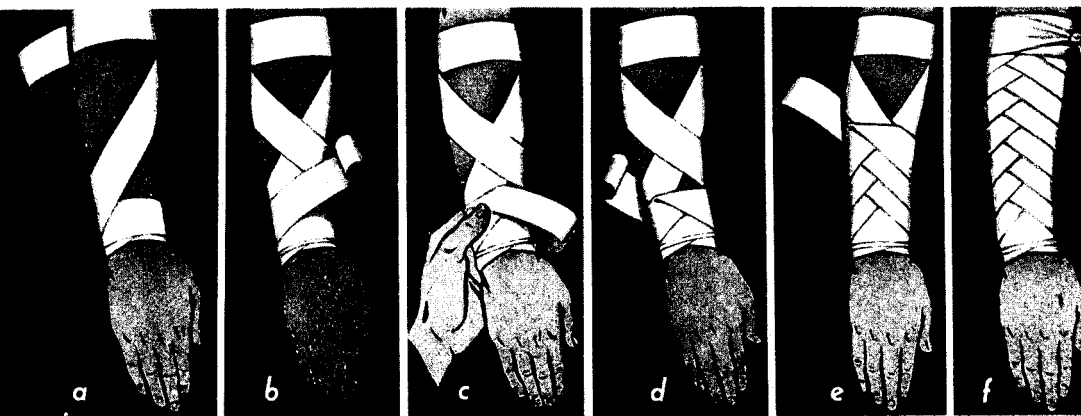


Figure 34

SPIRAL REVERSE OF ARM (fig. 34) Used to retain dressings and cover splints. It is a modification of the figure-of-eight, in that only the lower loop or one-half of the figure-of-eight is completed.

(a) Anchor at wrist with primary turns in usual way (see fig. 18), then bring bandage diagonally back of forearm to point just below elbow and make circular turn.

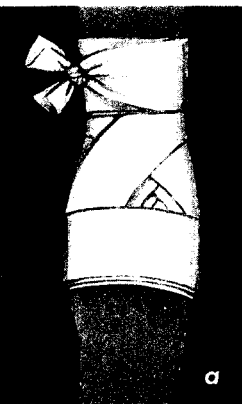
(b) Bring diagonally downward to wrist, and circle wrist. These turns hold the dressing while the spiral reverse is being applied. Then start the bandage diagonally upward again.

(c) Instead of continuing upward as in a figure-of-eight, bend back bandage and hold bend with thumb.

(d) and (e) Continue around arm and repeat procedure until arm is covered. Each turn must overlies about two-thirds of preceding turn and reverses must be in a straight line.

(f) Terminate with circular turns and tie.

Figure 35



FRONT OF ELBOW BANDAGE (antecubital fossa) (fig. 35) Used to retain dressings on the triangular hollow in front of the elbow joint. Unlike the figure-of-eight of the elbow, this bandage leaves back of elbow exposed. It allows movement of joint without disturbing dressing. Anchor bandage with circular turns around forearm just below elbow; then carry diagonally upward over hollow of elbow and circle arm just above elbow. Carry diagonally downward across hollow and pass around forearm; repeat procedure with each turn on forearm overlying preceding turn by two-thirds and each turn on upper arm remaining circular.

Figure 35

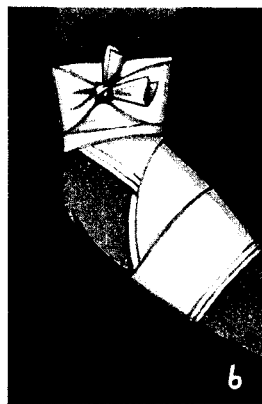




Figure 36

OBLIQUE BANDAGE (fig. 36) Used for retention of thick dressings or of temporary dressings which require frequent removal. Can be used on other parts besides arm. After securing first two turns above wrist, apply a series of spiral turns around arm so as to leave the uncovered area, between turns, equal.

SPIRAL BANDAGE (fig. 37) Used to retain dressings and compresses on the arm, leg, chest, or abdomen. Illustration shows spiral bandage of the arm. Anchor at wrist. Apply succeeding turns in a spiral direction, with each turn overlying one-third of preceding turn. Terminate and secure just below elbow.

Figure 37

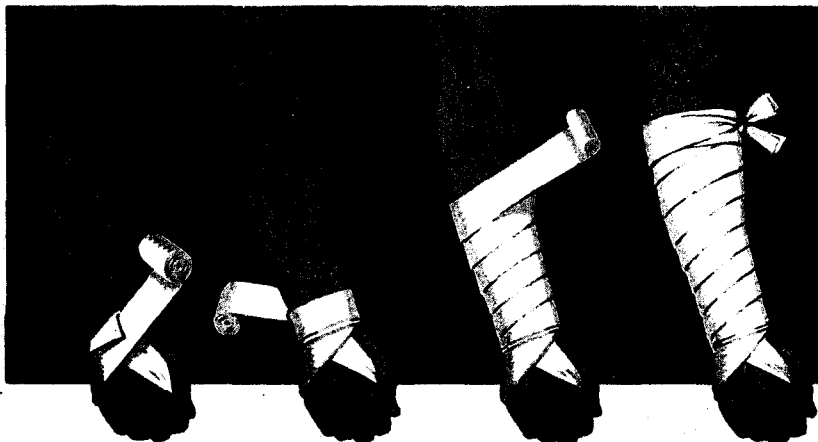


FIGURE-OF-EIGHT OF ELBOW . . DEMIGAUNTLET

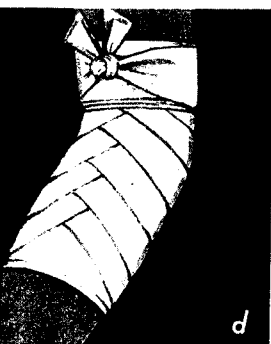
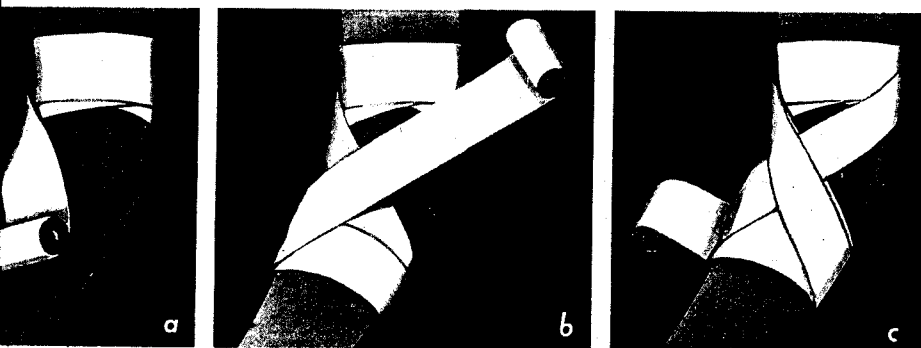


Figure 38

FIGURE-OF-EIGHT OF ELBOW (fig. 38) Used to retain dressings on the front part of elbow.

(a) Anchor with circular turns just above elbow.

(b) Carry bandage diagonally downward across front part of elbow; then circle forearm just below elbow to anchor, then back upward diagonally across inner part of elbow to primary circle.

(c) and (d) Repeat procedure until inner part of elbow is covered, each turn overlying preceding turn by two-thirds; terminate at starting point.

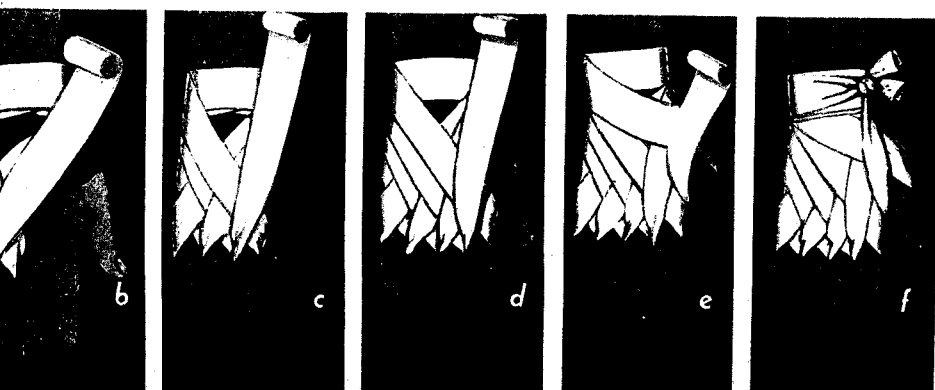
DEMIGAUNTLET (fig. 39) Used to retain dressings on back of hand, with palm and fingers exposed.

(a) Anchor with primary turns at wrist; bring bandage down back of hand to space between fourth and little finger; then around base of little finger and across back of hand to wrist.

(b), (c), (d), and (e) Circle wrist and repeat on other fingers.

(f) Terminate at wrist.

Figure 39



GAUNTLET (fig. 40) Used to retain dressings on back of hand.

(a) Anchor with primary turns at wrist; bring bandage back of hand to space between fourth and little finger; then spirally down little finger.

(b) Bring bandage up little finger with spiral; then across back of hand to wrist. Repeat procedure with each finger.

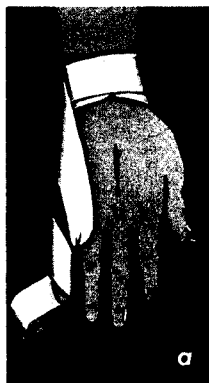


Figure 40

COMPLETE BANDAGE OF HAND (fig. 41) Used to retain dressings on the hand. Make certain gauze dressing is placed between each injured finger and on other wounds of hand.

(a) Anchor at wrist, then bend back and bring over back of hand to tip of forefinger.

(b) Continue over front of finger and palm to wrist, repeating procedure four or five times, covering all fingers except thumb. (Hold folds at wrist until next step.)

(c) Circle around folds at wrist to secure them.

(d) Then bring bandage diagonally across back of hand to tip of fingers.

(e) Make circular turn around ends of fingers.

(f) Continue with figure-of-eight.

(g) Terminate with several circular turns around wrist.

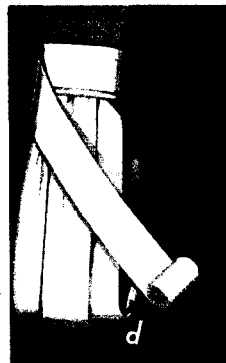
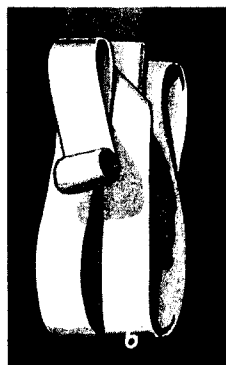
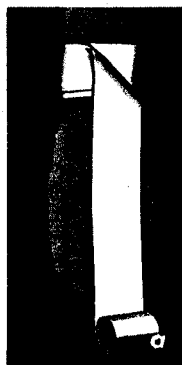


Figure 41

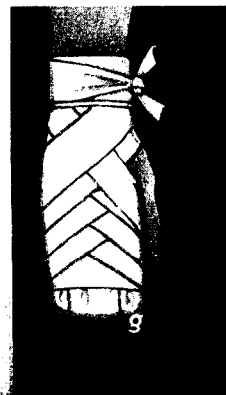
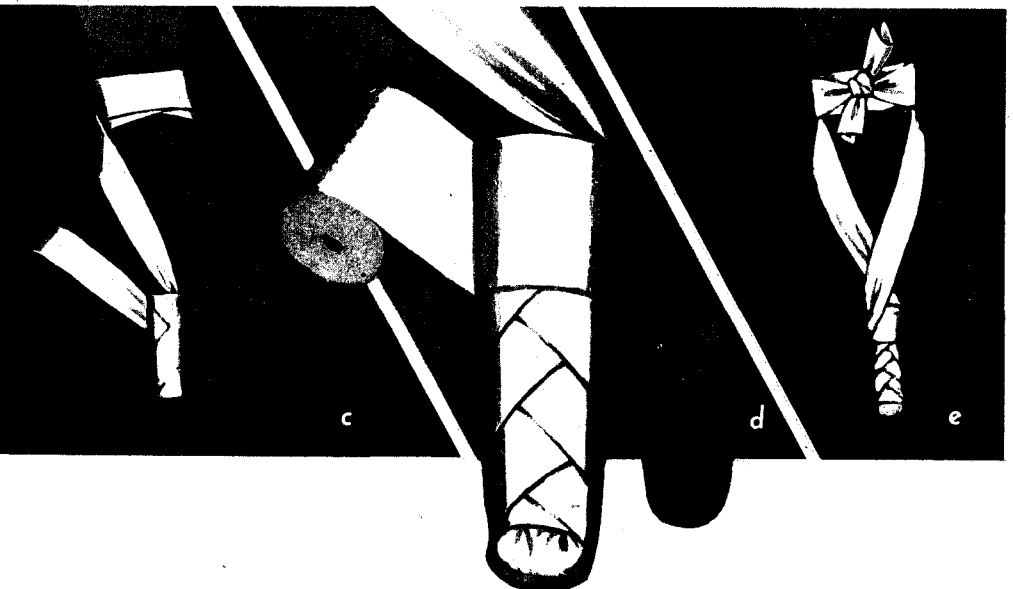
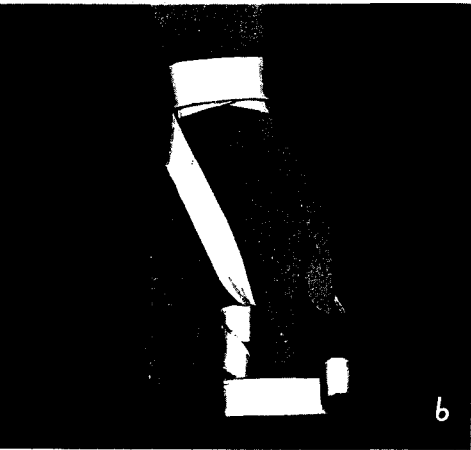
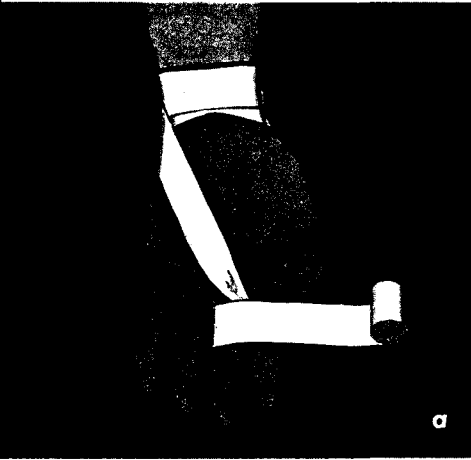


Figure 42



FINGER BANDAGE (fig. 42)
Used for holding dressing on finger.

(a) Anchor bandage at wrist; bring over back of hand and make one complete turn at base of injured finger over dressing.

(b) Make spiral turn to tip of finger, to hold dressing while applying bandage.

(c) Make another spiral turn back to base of finger.

(d) Then make recurrent bandage similar to that used for stump. (See fig. 43.)

(e) Tie securely after circular turns around wrist.

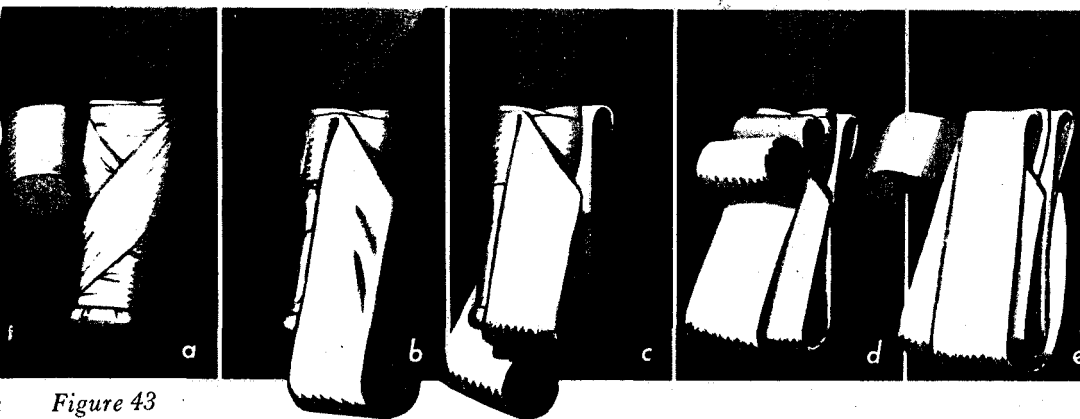


Figure 43

RECURRENT BANDAGE OF STUMP (fig. 43). Used to hold dressing around stump of arm, of leg, or around finger. Anchor bandage below knee with circular turns of bandage (not illustrated).

(a) Hold dressing in place with loose spiral turns down and up stump, securing spirals with circular turn at knee.

(b) Fold bandage at right angles at knee and carry over outer half of stump, down and then under stump.

(c) and (d) Continue bandage back to knee, reverse, and carry over stump again, now covering inner half.

(e) Repeat procedure, now covering middle of stump. It is advisable to place several additional turns over stump in manner described above.

(f) Carry several turns around base of folds to secure them in place.

(g) Cover loops with spiral to end of stump.

(h) Complete bandage with figure-of-eight, progressing from end of stump to knee. Terminate with circular turns just below knee.



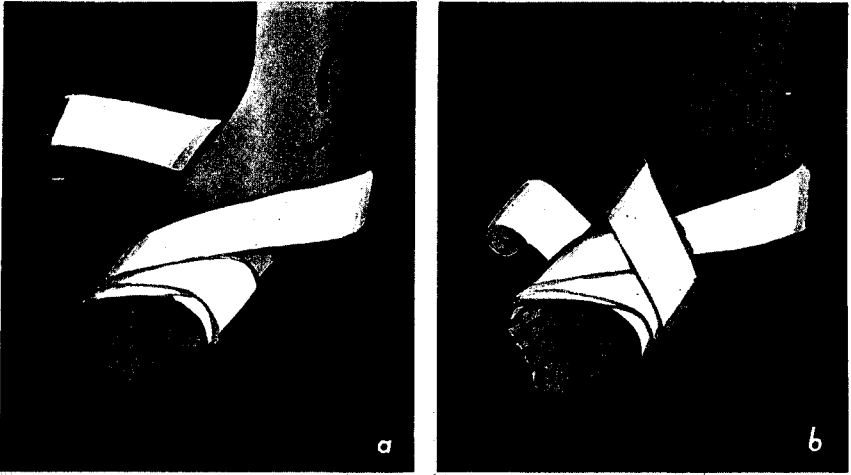


Figure 44

SPICA OF FOOT (fig. 44). Used to retain dressings on foot, and for support of sprained ankle.

(a) Anchor around base of toes; carry diagonally across instep, around heel.

(b) Continue diagonally across preceding turn to base of large toe.

(c) and (d) Repeat procedure, turns gradually ascending on both foot and heel, crossings being at a straight line along middle of instep. Terminate above ankle.



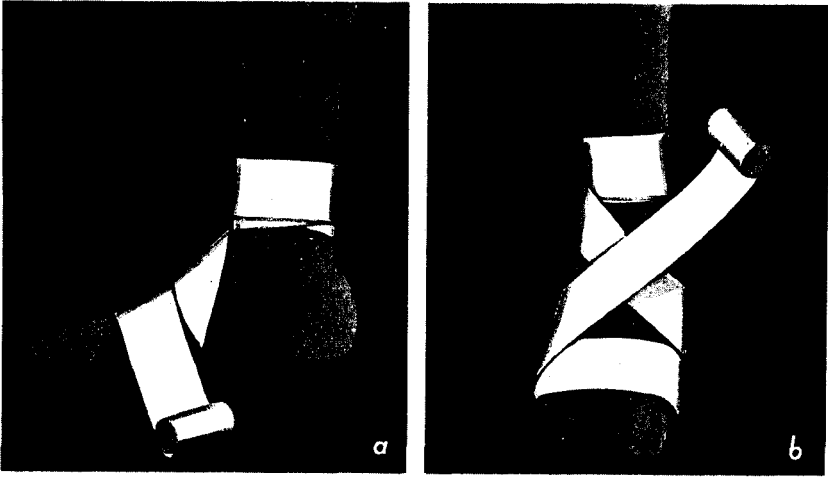


Figure 45

FIGURE-OF-EIGHT OF FOOT WITH HEEL EXPOSED (fig. 45).
Used to retain dressings on foot.

- (a) Anchor just above ankle; bring bandage diagonally across instep to base of large toe, with turn around base of toes.
- (b) Continue diagonally across instep to point of beginning.
- (c) Repeat procedure, leaving heel exposed, with turns ascending until arch and instep are covered. Terminate at starting point.



PLASTER OF PARIS BANDAGE



USE These bandages are used for the fixation and treatment of fractures as well as for fixation and treatment of injuries and diseases of joints. The bandages are prepared by impregnating the meshes of crinoline gauze with plaster of paris, as illustrated.

PREPARATION (fig. 46)

(a) Crinoline is torn in the desired width and loose threads are pulled from each side.

(b) Roll crinoline strip loosely on dowel stick or similar piece of wood.

(c) Unroll about 3 feet of crinoline on flat surface; work plaster of paris gently into mesh with palm of hand, spatula, tongue-stick, etc., and roll loosely on another dowel stick. Repeat process with next 3 feet of bandage and continue until entire bandage is impregnated with plaster. Remove stick. If not used immediately, bandage should be wrapped in waterproof paper, if available, or other paper. Store in a dry place, lying flat.

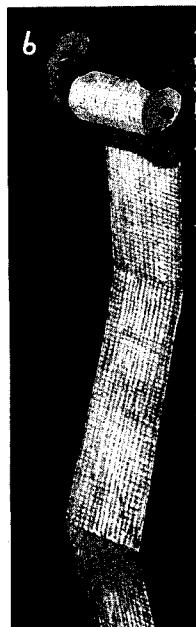
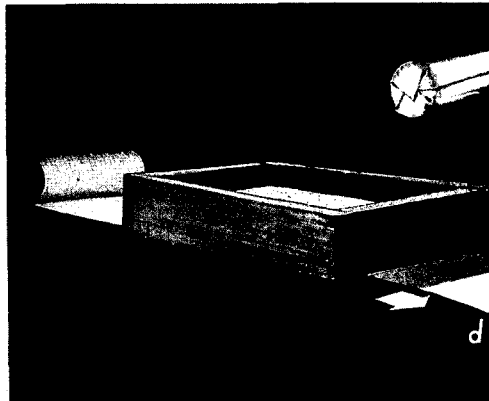
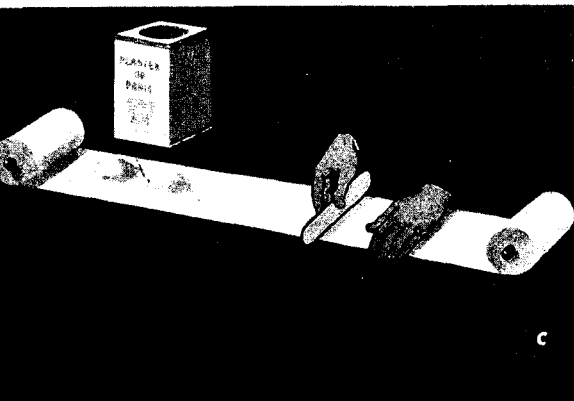


Figure 46

(d) Plaster of paris bandages can also be quickly and satisfactorily made by using a box 10 inches long, 5 inches wide and 3 inches deep, with top and bottom removed. A small slot approximately $\frac{1}{8}$ -inch to $\frac{1}{4}$ -inch deep and 5 inches long is cut from the bottom of the two narrow sides of the box. The box is then placed on a flat surface and end of bandage is introduced through the slot and passed through other slot for distance of about 1 inch. Then plaster of paris is placed in box to about one-half its depth. When the protruding end of the bandage is withdrawn from the slot it will be impregnated with a smooth layer of plaster of paris. The depth of the layer will depend upon the height of the slot. The bandage is then rolled on a dowel stick or similar piece of wood and process repeated until entire bandage has passed through box of plaster of paris. Stick should be removed and bandage wrapped in waterproof paper if not to be used immediately.



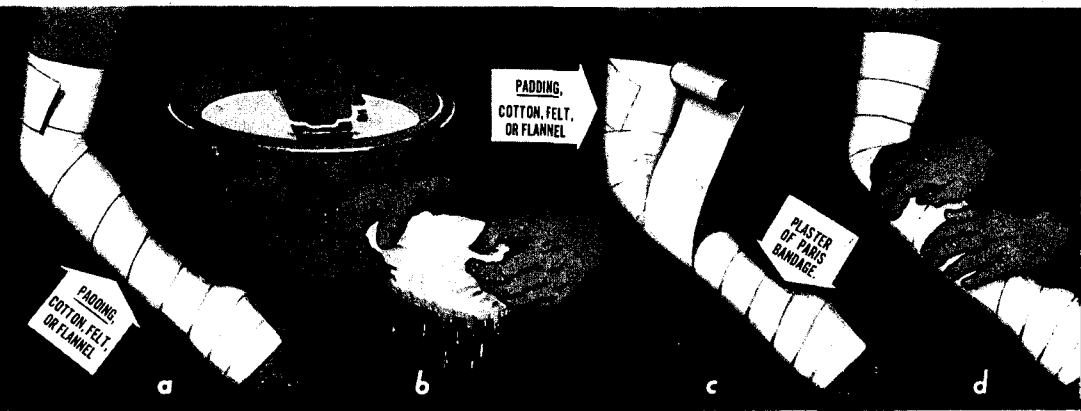


Figure 47

APPLICATION (fig. 47)

(a) The part to be encased should first be covered with a suitable bandage of soft material, preferably cotton felt, or sheet wadding. Bony prominences should be well protected with cotton or felt. Care should be taken to remove all creases in these dressings and bandages.

(b) Two rolls of the plaster bandage are then placed in lukewarm water. When bubbles cease to rise, one roll is removed, and the excess water removed by grasping the roll at its two ends and pressing towards the center with the hands. This prevents the loss of a considerable amount of plaster through the ends of the rolls. (As soon as bandage is removed from the water replace with another bandage.)

(c) The plaster bandage should be applied rapidly and evenly to the limb. Additional bandages are applied as soon as the first has been completed.

(d) During the application, the bandage should be gently rubbed with the hands in order to provide a smooth even surface. The bandage should not be twisted and each turn should conform to the limb without tension. In changing direction of bandage it should be tucked or cut and started again. When the final roll has been applied, the surface of the completed cast should be rubbed evenly with liquid plaster prepared by addition of water to dry plaster until it has the consistency of thick cream. In all recent injury cases that are to be evacuated the plaster casts should be split on both sides (completely bivalved). Removal of a plaster of paris cast may be accomplished with the aid of a plaster of paris shears. If none is available, the plaster may be softened with a small amount of peroxide of hydrogen, hydrochloric acid or vinegar, and then cut with a knife.

GENERAL A dressing or compress is the name given to any material that is applied directly over a wound. The material most commonly used is gauze, although cotton wrapped in gauze is sometimes used. Gauze is better than cotton as it is more absorbent, and allows for more circulation of air. Do *not* put cotton directly over a wound. It sticks and is very hard to remove.

PURPOSES AND USES:

To cover wound and protect from bacteria.

To control bleeding.

To apply medication.

To absorb excessive moisture.

To increase temperature around wound.

Since a dressing is for use directly over an open wound, it must not only be clean in the ordinary sense, but it must also contain no germs, i. e., it must be *sterile*. In handling all dressings remember that the surface to be applied to the wound must not come in contact with the fingers or any substance that is not sterile. Be careful, in applying the dressing to the wound, not to drag it across the dirty skin around the wound nor to allow it to slip about over the skin away from the wound.

IMPROVISED DRESSINGS When sterile dressings are not available, freshly laundered handkerchiefs, towels, or similar cloths may be used in emergencies. These should be carefully unfolded and a part that has not been touched placed next to the wound. Lacking this, take the cleanest cloth available and kill the germs by scorching with a hot iron, or over a flame. The small amount of carbon which may collect on the cloth during this operation contains no germs and is not sufficient in amount to do any harm.

OTHER METHODS OF IMPROVISATION Boil a piece of cloth in a tin can full of water for 10 minutes; soak a piece of cloth (i. e., shirt tail) in alcohol. When a patient can be brought under the care of a medical officer in the near future, the procedure necessary in the first-aid treatment of ordinary wounds is to stop the bleeding, treat the shock, and apply a sterile dressing to the wound. If a medical officer is not available, the wound must be further treated as described below.

PROCEDURE In treating a freshly made wound, the following procedure is recommended if facilities are available:

1. Cleanse the hands as thoroughly as possible by a thorough scrubbing with soap and hot water, followed, if possible, by immersion in hot 1-2000 bichloride of mercury solution and then 70 percent alcohol.

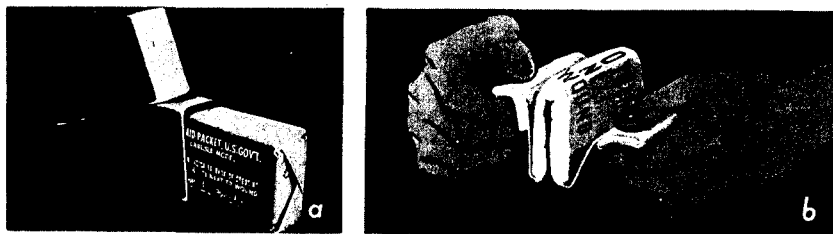


Figure 48

2. If bleeding exists, control it. If any instruments are used to effect control of bleeding, they should first be sterilized by immersion in a sterilizing solution such as 70 percent alcohol.

3. Sterilize all instruments to be used in removing foreign bodies such as dirt, glass, splinters, etc., from the wound.

4. Sprinkle sulfanilamide powder liberally on the wound and over surrounding skin.

5. Cover the wound with a sterile dressing if one is available, and bandage. The first-aid packet, Carlisle model, is an excellent dressing (fig. 48).

(a) Open packet and remove dressing, the fingers grasping the extreme edges of the dressing so as to prevent contamination.

(b) Open dressing carefully, with the printed side up.

(c) Apply dressing firmly to wound, with printed side up.

(d) Secure.

6. There is no substance which should be used by the first-aid man to wash a wound; more dirt is washed in than out, and ordinary water is dangerous since it is not sterile. Strong antiseptics, such as bichloride of mercury or phenol, will destroy the cells of the body which dispose of the pus bacteria before they kill the latter. Peroxide of hydrogen is not strong enough to kill all bacteria and in large or deep wounds it washes some of these bacteria to uninfected parts which then become infected.

7. Very dirty or greasy wounds are best cleansed by a medical officer only. However, if a medical officer is not available, the medical department soldier can cleanse a wound by the liberal use of soap and water. Oil and grease can be removed from a wound by gently cleansing with a piece of absorbent cotton wet with gasoline, benzine, or ether.



SECTION III

SPLINTING FRACTURES

Broken bones (fractures) can cause total disability or death. On the other hand they can often be repaired so that the patient completely recovers from his injury. A great deal depends upon the treatment he receives *before being moved*. This treatment usually requires the use of splints. Fixing the fragments of a broken bone prevents the jagged edges of the bone from tearing blood vessels and nerves. In simple fractures (one in which there is no communication between the outside of the skin and the fracture) proper application of a splint will prevent the bone from piercing the skin and thus produce a compound fracture. If the fracture is compound, splinting will prevent further injury to the wound and the introduction of more infection. In addition, proper splinting greatly relieves the pain of a fracture and will reduce and sometimes actually prevent shock. Remember, all fractures of long bones should be splinted "where they lie" before movement or transportation of any kind is attempted. The following pages illustrate the correct methods of applying various splints. Procedures are not simple. They require constant practice and careful attention to detail. But their importance cannot be over-emphasized.

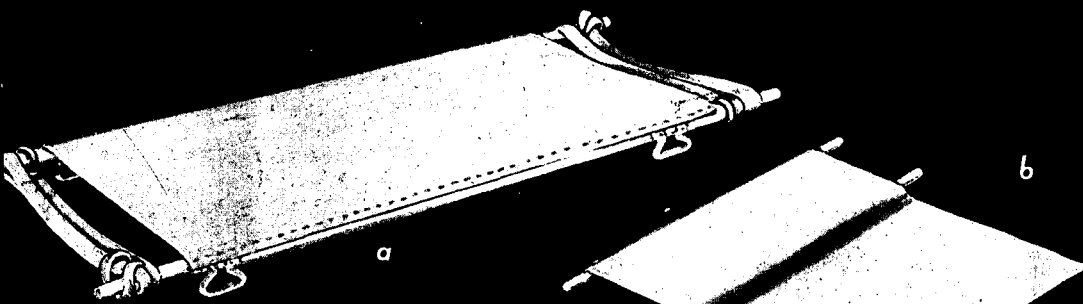


Figure 49

APPLICATION OF ARMY HINGED, HALF-RING LEG SPLINT Done in 10 steps.

*STEP 1.—DRESS LITTER (fig. 49).

(a) Litter open.

(b) Place first blanket in position.

(c) Fold first blanket on self to overhang one-third on opposite side of litter.

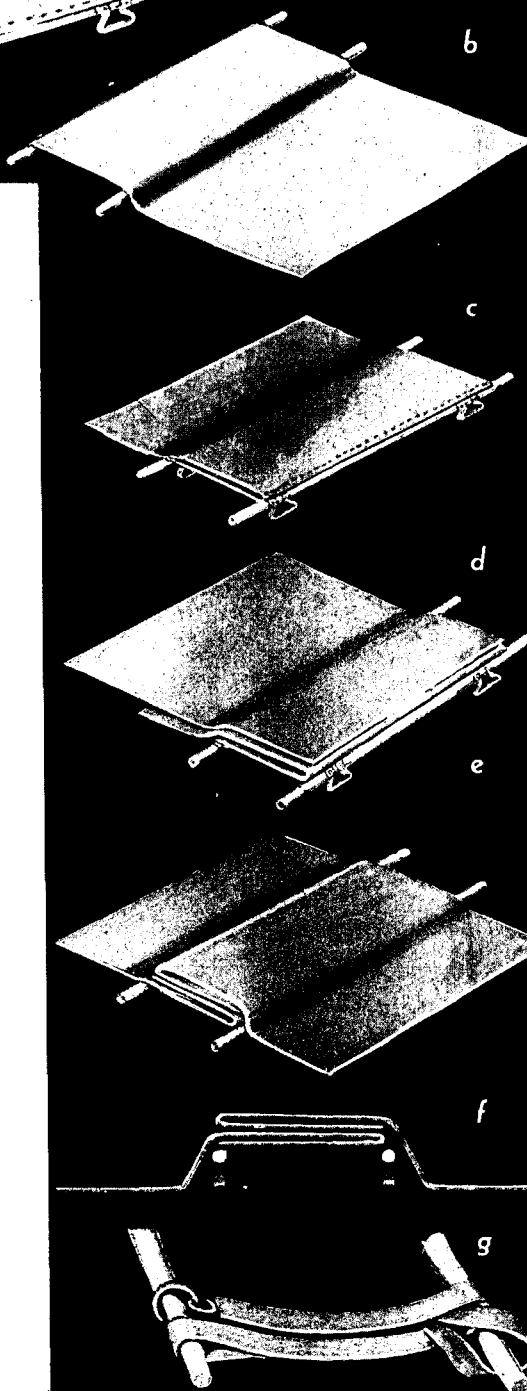
(d) Fold second blanket on opposite side of litter in same manner as first blanket.

(e) Fold back on self to overhang one-third on opposite side.

(f) End view—shows four blanket folds on which patient is placed.

(g) Shows carrying strap secured to handles of litter.

*The application of the Army hinged, half-ring leg splint, as here outlined, is done in 10 steps for the purpose of clarity in instruction. However, it should be borne in mind that the operation of splinting is a continuous procedure in which all men concerned with splinting the patient are constantly occupied with application of the splint or the treatment of the wounded patient.



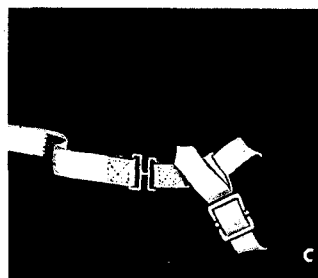
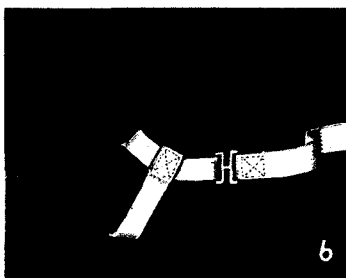


Figure 50

STEP 2.—APPLY TRACTION STRAP—
INITIATE TRACTION (fig. 50) This
 step may be done simultaneously with step 3.
 See comment step 3.

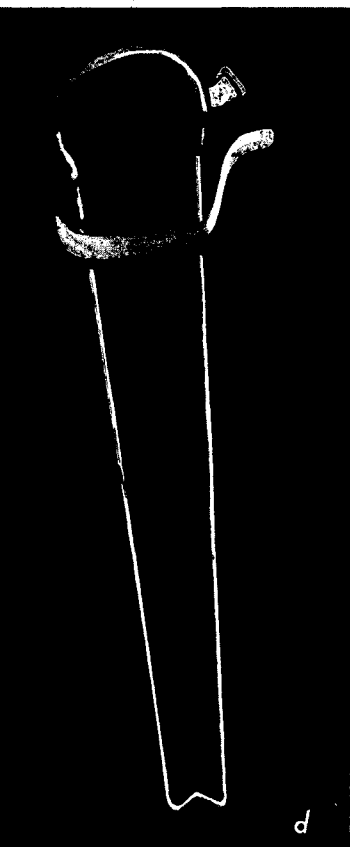
(a) Traction strap.

(b) Traction strap applied over shoe.

(c) Same as (b), opposite side of foot.

(d) Army hinged half-ring leg splint.

(e) No. 1 man has already placed splint alongside injured leg with the ring near the hip, and with the buckle on the outside. Illustrations show procedure where right leg is injured. No. 2 man passes hand through rods grasping heel with that hand, and instep with other hand. No. 2 man then pulls on foot (exerts traction) and while doing so raises it several inches from the ground. No. 1 man then slips splint under leg, with the buckle and long rod to the outside, and No. 3 man supports leg while it is being pulled and raised. When this is done, No. 1 man dresses wound.



STEP 3.—DRESS WOUND* If wound has not already been dressed it is done at this point. If already dressed the dressing is adjusted. Steps No. 2 and No. 3 may be done simultaneously by different members of the team.

*It is presumed that prior to application of the splint the patient will have received first aid, such as control of bleeding, temporary dressing of wound, and administration of morphine.

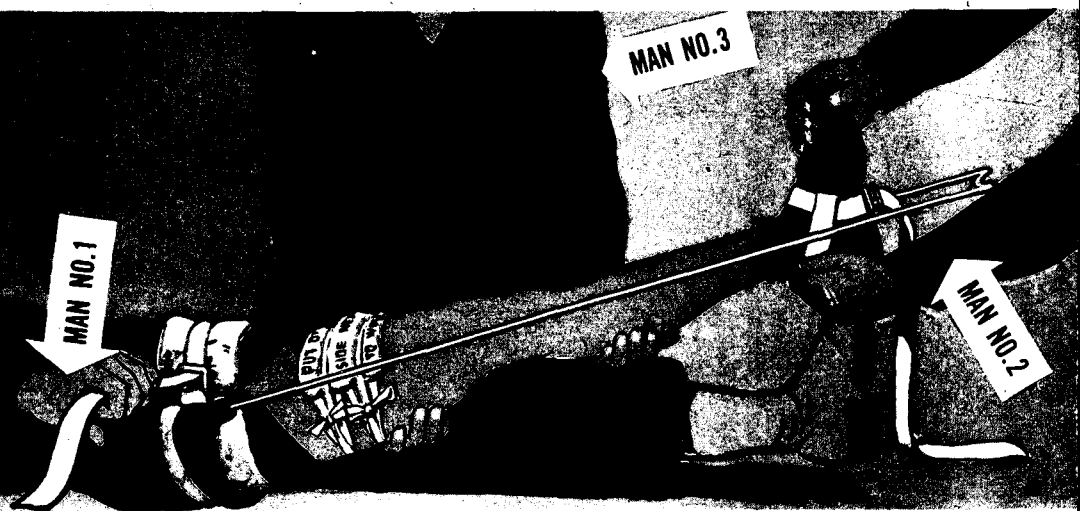


Figure 51

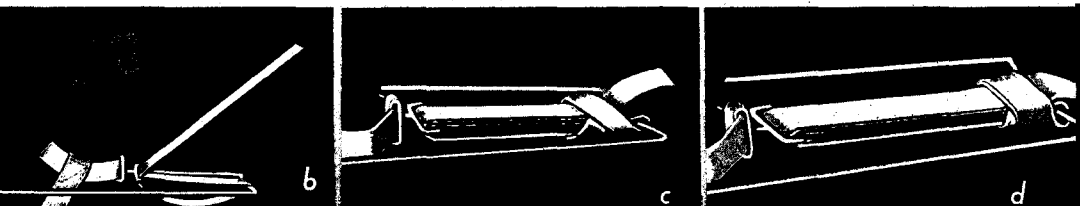
STEP 4.—APPLY SPLINT AND SECURE TRACTION STRAP
(fig. 51)

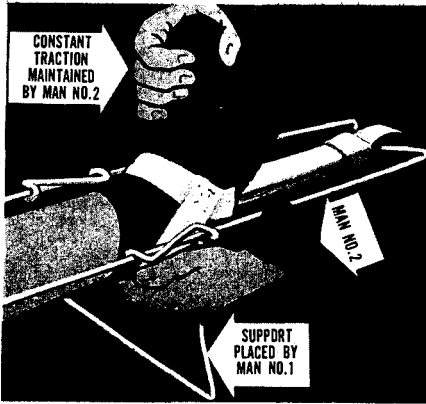
(a) No. 1 man eases splint up under patient's hip, bending padded half-ring to a right angle. (Make certain this sets against bone in buttock—tuberosity of the ischium.) Then No. 1 man fastens strap securely at upper thigh. (It is advisable to use padding under strap.) No. 2 man continues pulling on leg, and No. 3 man continues to support limb. (Long rod of splint should always be on outside.)

(b) Long free end of traction strap is brought down over notched end of splint by No. 1 man, and then brought back and passed through link at swivel. Nos. 2 and 3 continue as in preceding illustration.

(c) No. 1 man pulls on free end of traction strap to secure greater traction, and fastens as shown.

(d) Strap securely fastened to splint.



LEG SPLINT . . STEPS 5 AND 6

STEP 5.—SECURE SPLINT SUPPORT (fig. 52) Splint support placed in position behind heel by No. 1 man. Nos. 2 and 3 continue to maintain traction and support limb.

Figure 52

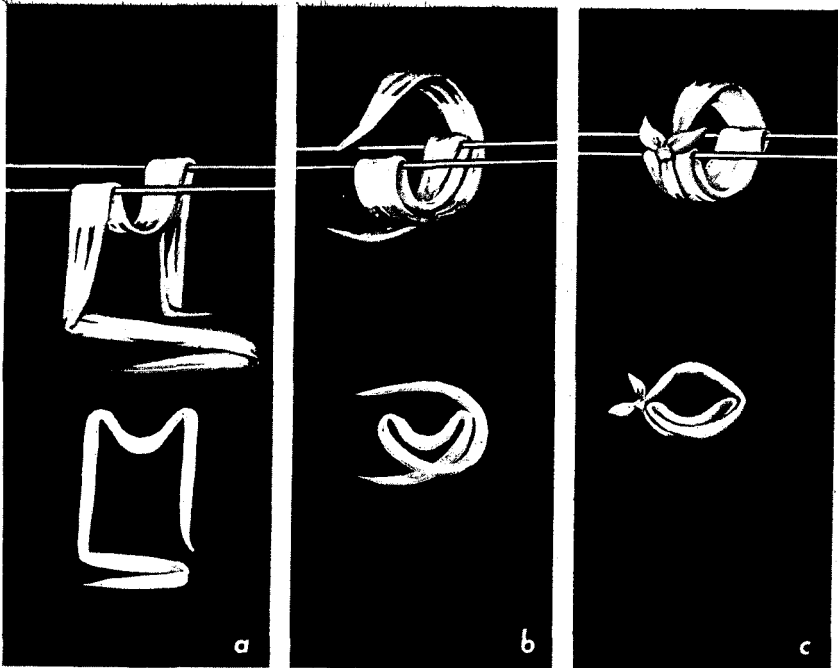
STEP 6.—SUPPORT LEG (fig. 53)

(a) (b) and (c) Diagram showing proper method of supporting with triangular bandages. Shaded areas indicate position of limb.

(d) Five triangular bandages in place supporting injured limb. See opposite page.

When leg is supported, Nos. 2 and 3 men release their traction and support respectively.

Figure 53



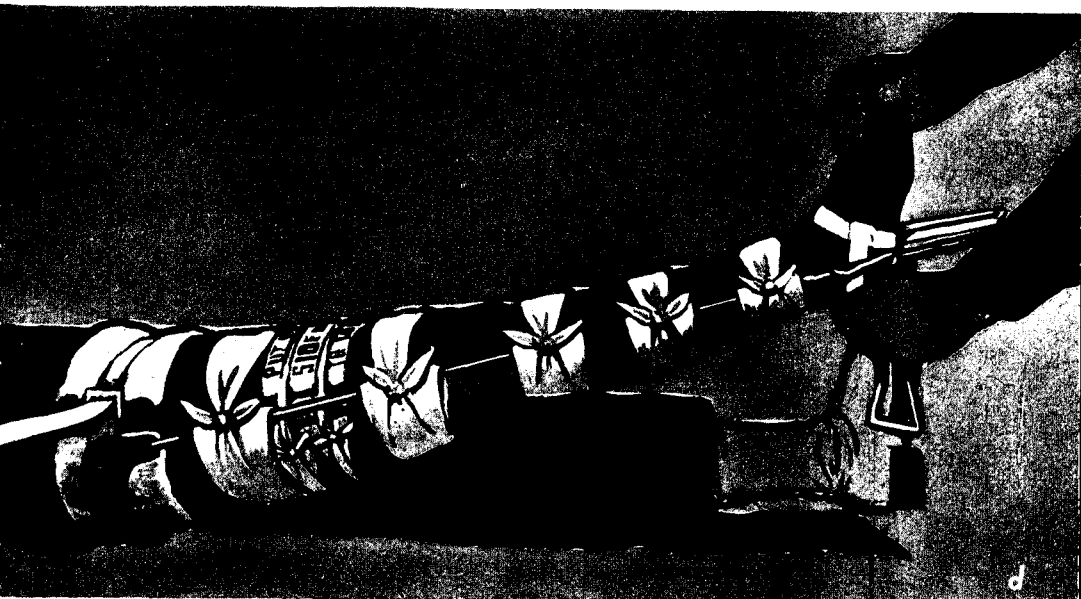


Figure 53

STEP 7.—PLACE FOOTREST IN POSITION AND SECURE FOOT (fig. 54). Secure foot with triangular bandage folded as cravat and tied in same manner as for cradling leg.

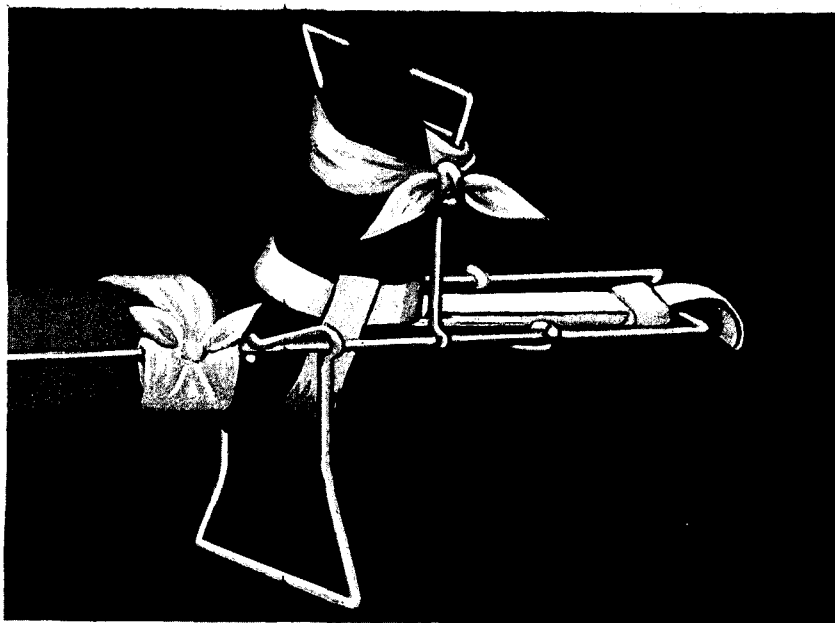


Figure 54



Figure 55

STEP 8.—PLACE PATIENT ON DRESSED LITTER (fig. 55)

(a) No. 2 and No. 3 kneel on side of patient nearest splinted leg; No. 1 kneels on opposite side. All men lean on knee nearest patient's feet. No. 1 places his hands under patient's back and thighs, while No. 2 places his hand under patient's fractured leg, and No. 3 supports patient at shoulder



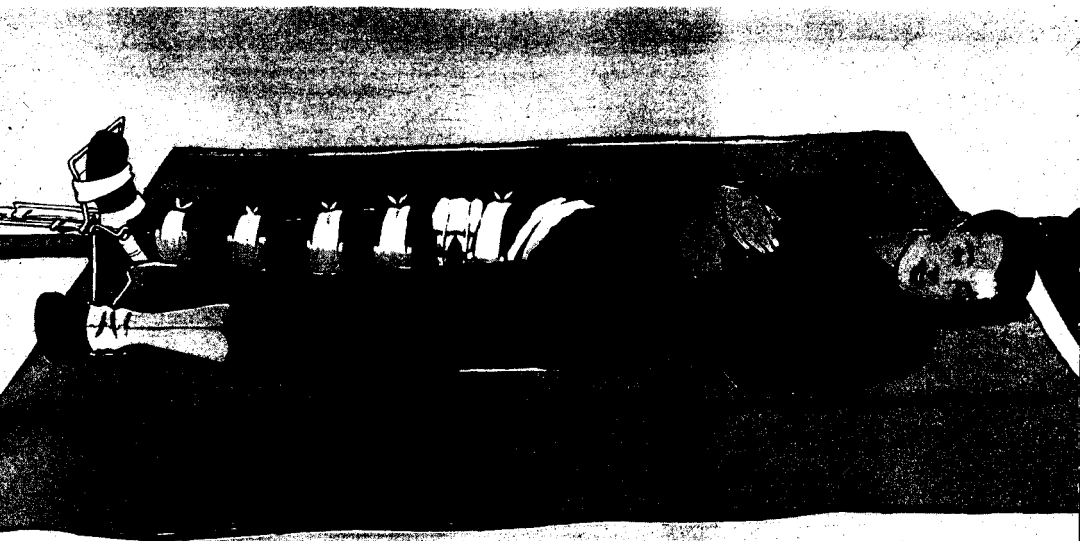


Figure 55

and back. Then all three men raise patient together onto thighs of No. 2 and No. 3.

(b) See page opposite. Nos. 2 and 3 men support patient on thighs while No. 1 man places dressed litter in position. Then No. 1 man aids Nos. 2 and 3 in placing patient gently on litter, supporting patient with hands in same positions as when lifting patient.

(c) Patient on litter. Note splint support is resting on litter several inches from lower border of canvas.

STEP 9.—SECURE SPLINT TO LITTER—WITH LITTER BAR (fig. 56).

Litter bar placed in position with groove under horizontal part of splint support. Splint support then placed in this groove and locked there by turning handle of cam. (Bar placed so that cam is on same side as splinted leg.)

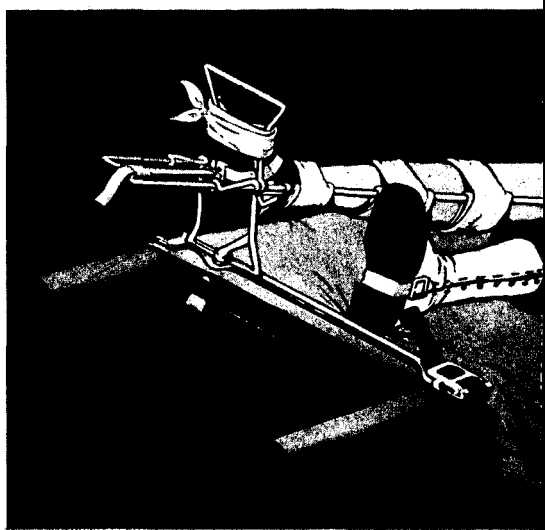


Figure 56

LEG SPLINT . . . STEP 10

STEP 10.—COVER PATIENT (fig. 57) Nos. 2 and 3 men fold third blanket once lengthwise and place it on patient so that one edge is under chin. They then bring up free edges of first two blankets, fold over third blanket, and secure in place with safety pins.

NOTE.—Be sure to enclose patient's feet and lower end of splint.

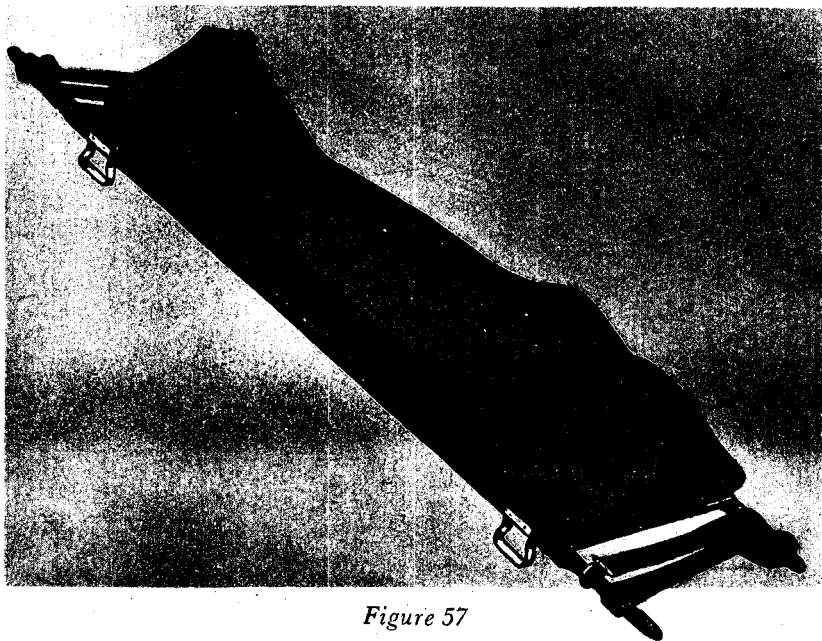
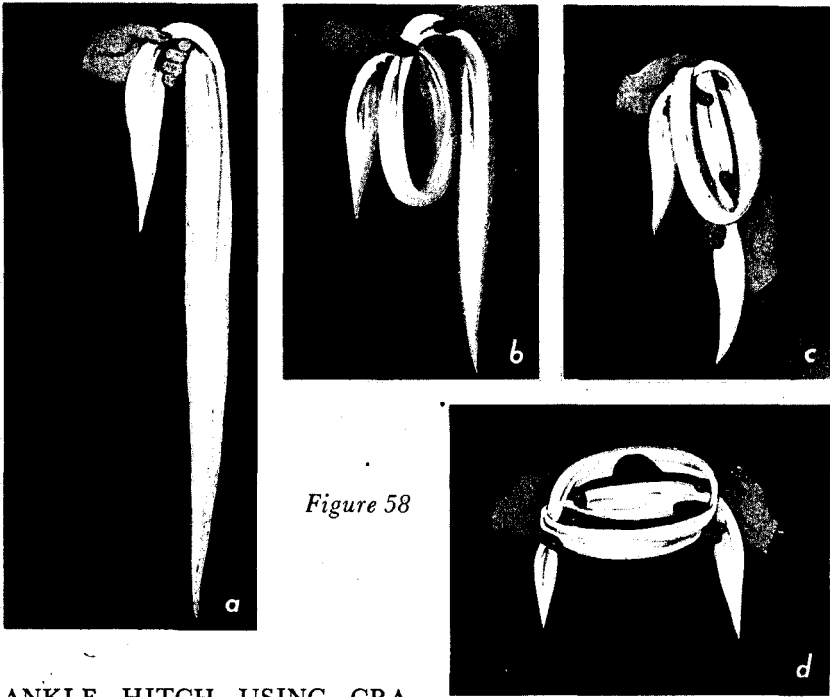


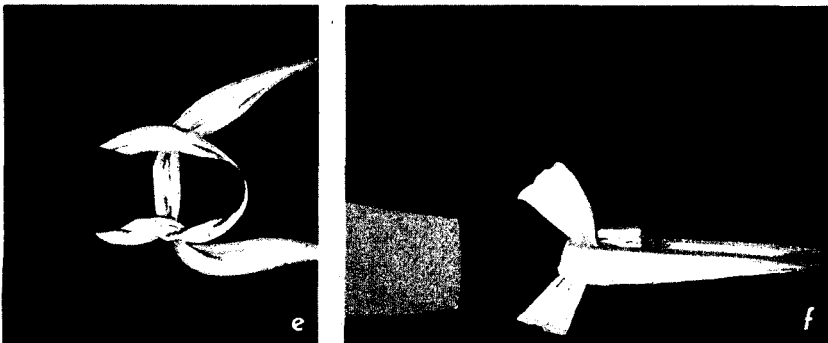
Figure 57



ANKLE HITCH USING CRAVAT OR ROLLER BANDAGE

(fig. 58) Used when traction strap is not available. (Cravat shown in illustrations.)

- (a) Hold cravat in one hand.
- (b) Make loop.
- (c) Push long end through loop, to make loops as shown in next illustration.
- (d) Loops completed, and about to be applied on foot, top loop going over instep, next loop going under instep, and third loop under heel.
- (e) Loops applied.
- (f) Apply traction using two ends.



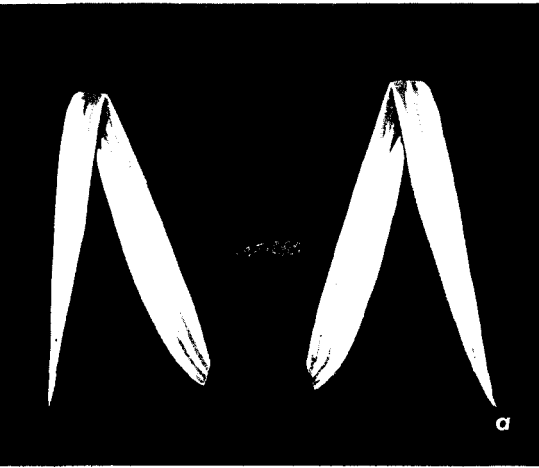


Figure 59

ANKLE HITCH USING TWO CRAVATS (fig. 59) Used for holding sprained ankle in fixed position, and for securing traction in cases of fracture of thigh or leg.
 (a) Place center of cravat under arch of shoe.

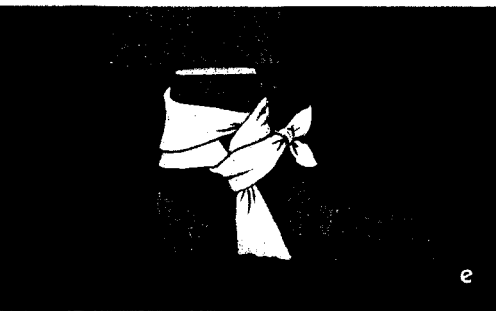
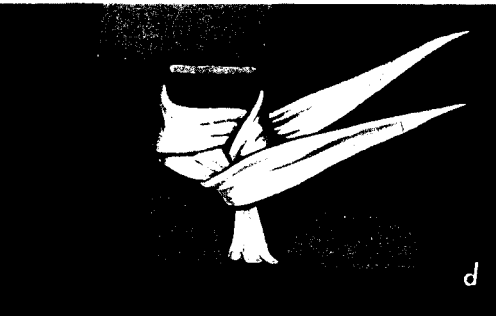
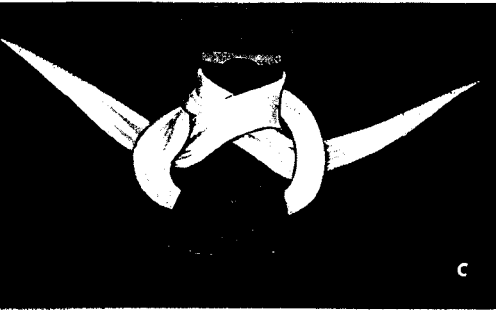
(b) Carry both ends back of foot, crossing at back of ankle.

(c) Cross each end in front of ankle, carrying ends under bandage at side of ankle. Take up slack.

(d) Bring ends to front.

(e) Tie securely.

(f) Slip second cravat through fold at instep of shoe.



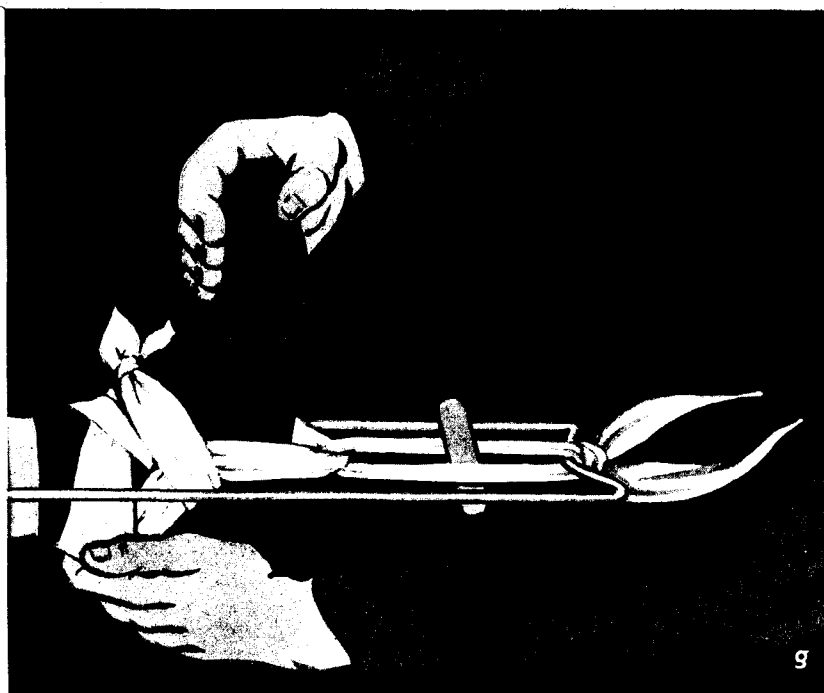
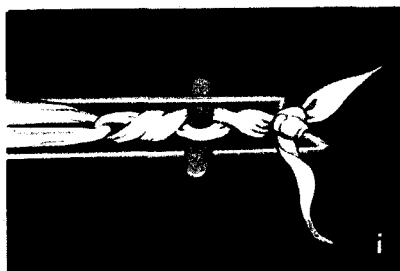
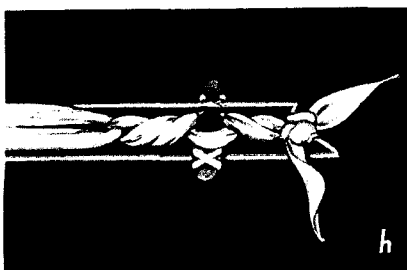


Figure 59

(g) Fasten ends of second cravat in square knot over attached end of splint. Insert piece of wood in position for use as windlass.

(h) and (i) Traction obtained by twisting piece of wood. When traction is complete, secure windlass to splint.



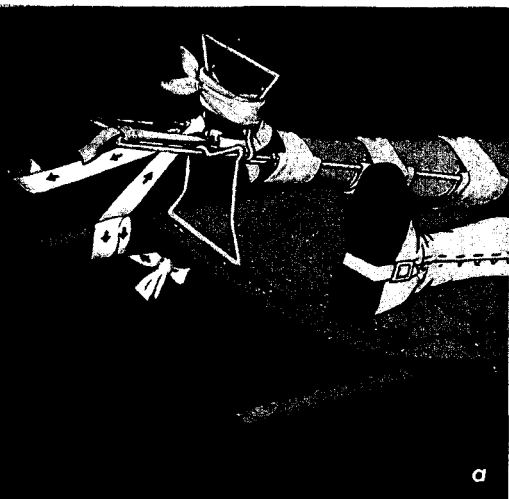
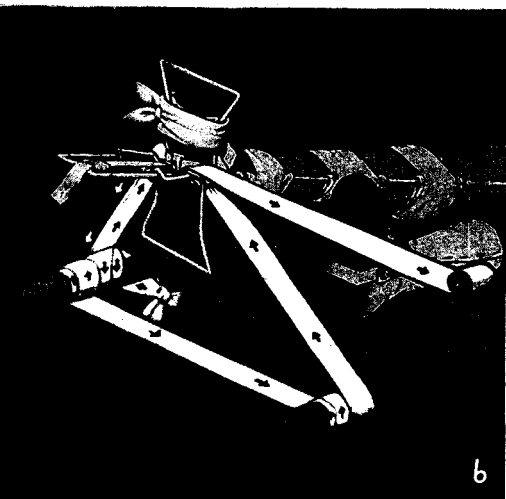


Figure 60



b

ALTERNATE METHOD OF SECURING SPLINT TO LITTER WITH ROLLER BANDAGE TIE (fig. 60)

NOTE.—The carry strap is omitted in all illustrations for sake of clarity.

(a) Secure end of bandage to litter support on same side as splinted leg. Encircle handle of litter close to canvas with two turns and carry up to splint at juncture of splint support. Secure here with two turns of bandage; then carry back and around same handle encircling with two turns, keeping bandage taut at all times.

(b) Carry bandage under handles to opposite handle of litter, encircle twice, and secure to far end of splint at juncture with splint support. Secure with two turns.

(c) Carry back around second handle, encircle twice and secure to second litter support.

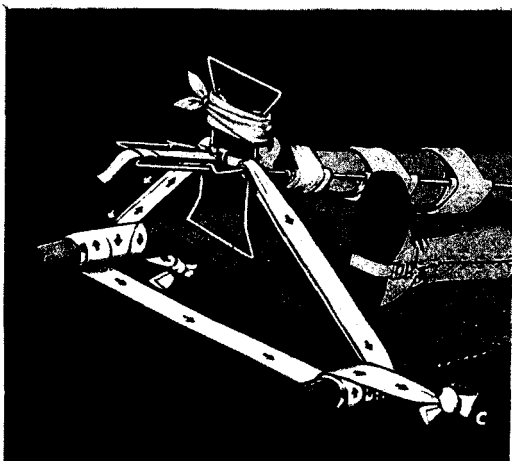




Figure 61

WIRE LADDER SPLINT (fig. 61) Used for fractures of lower portion of leg and for injuries and fractures about the ankle and foot.

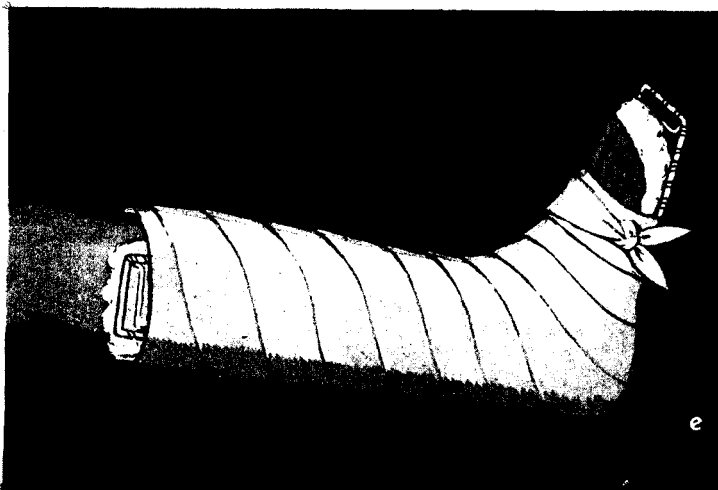
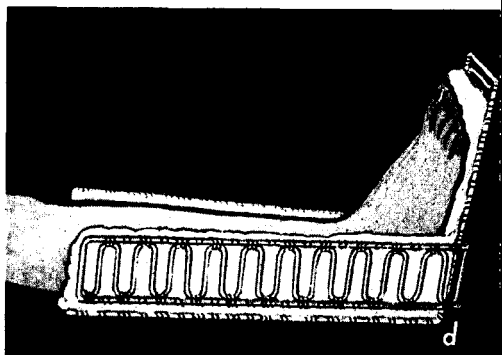
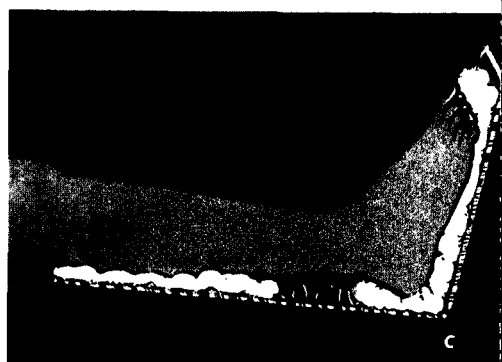
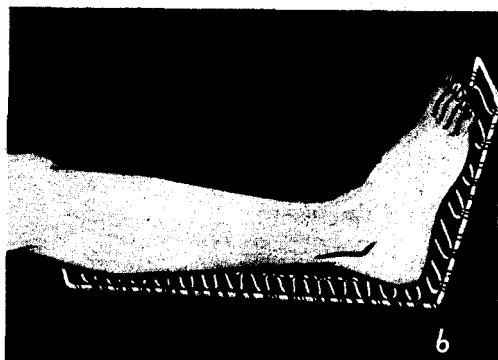
(a) Straight splint.

(b) Splint bent to fit.

(c) Pad splint at calf, heel, and foot. Place splint in position.

(d) Second wire ladder splint folded in U-shape and placed in position. Padding inserted between injured limb and second splint.

(e) Splinting completed by securing both splints with roller bandage, shown, or with cravats.



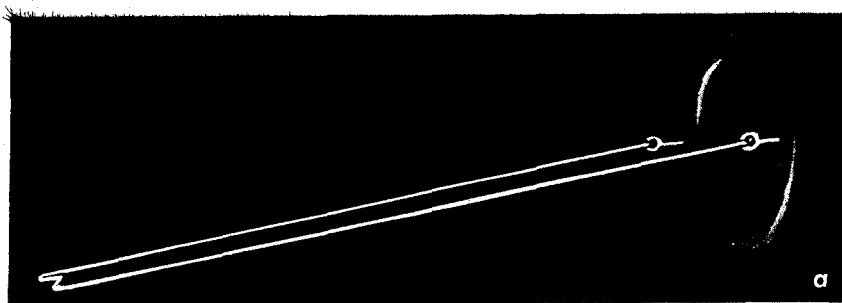
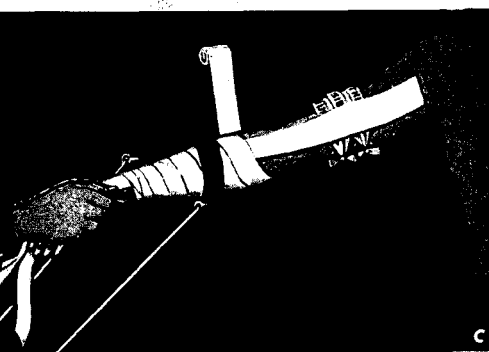
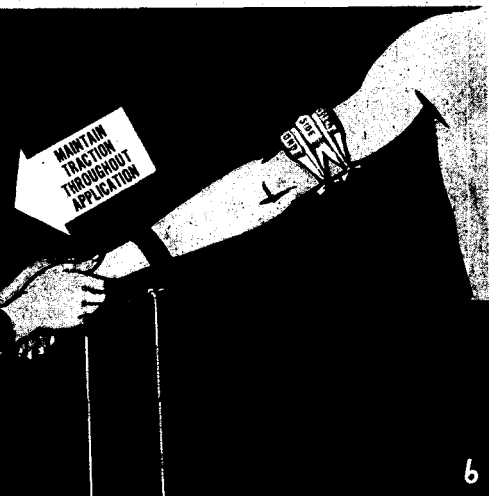


Figure 62



ARM SPLINT (THOMAS, HINGED). APPLICATION WITH ADHESIVE SKIN TRACTION (fig. 62) Used for fractures of the shaft of the humerus (arm) and fractures involving the elbow joint.

NOTE.—Once traction is initiated, it is maintained until the splint is secured.

(a) Thomas, hinged, arm splint.

(b) Ring slipped over wrist; No. 1 initiates traction while No. 2 dresses wound.

(c) No. 1 maintains traction while No. 2 applies two long pieces of adhesive tape down each side of arm and extending 6 to 7 inches beyond finger ends. No. 2 then applies spiral bandage covering tape and arm. A hitch must never be used around the wrist.

(d) Splint seated in armpit, traction still maintained.

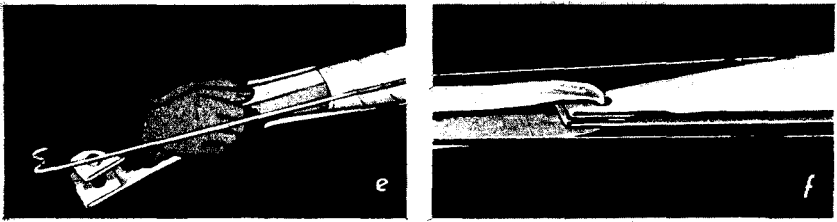
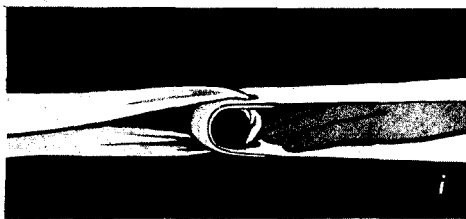
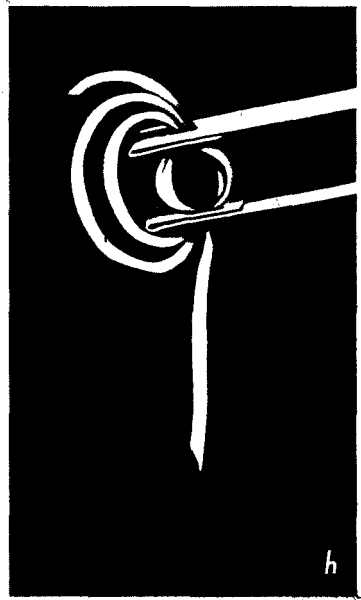
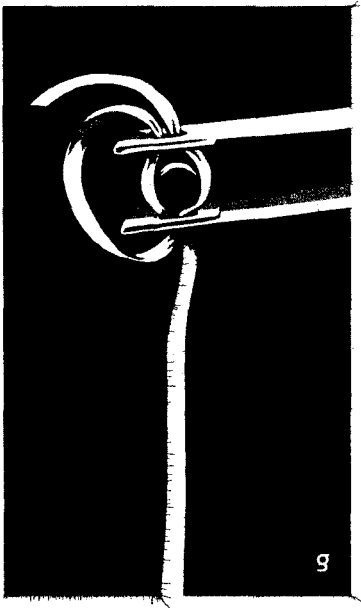


Figure 62

(e) Fold tape ends back on selves about 3 inches to form secure ends; cut $\frac{3}{4}$ -inch holes in each end; traction still maintained.

(f) Push bandage used as windlass through holes in ends of tape. (Illustration shows method without the use of wood separator.)

(g), (h), and (i) Show method of anchoring tape ends with wood block or roller bandage separator and bandage hitch.



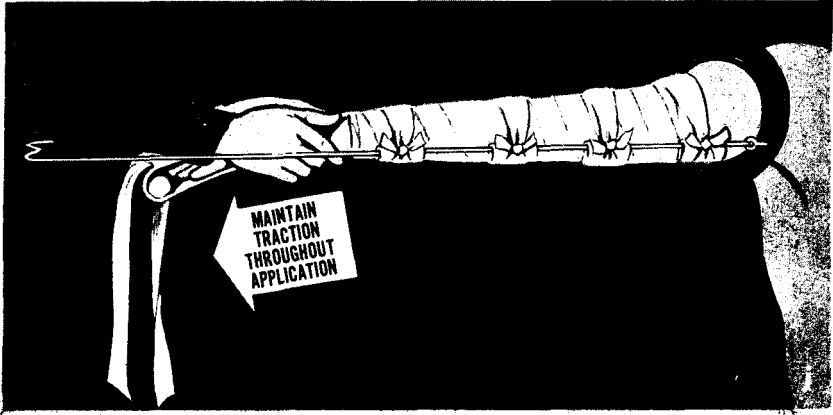
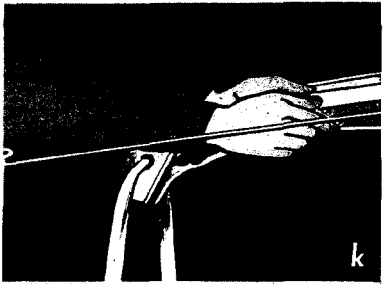
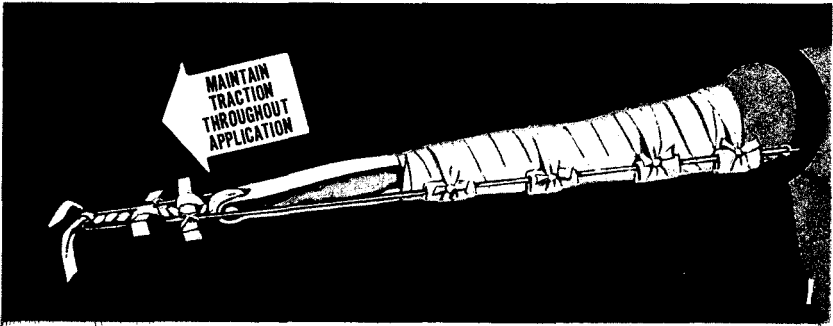


Figure 62



- (j) Arm supported in splint; No. 1 still maintains traction. (Illustration shows tape ends as in (i).)
- (k) Shows alternate hitch as in (f).
- (l) Splinting completed, windlass applied, turned for complete traction and secured. Manual traction now released.



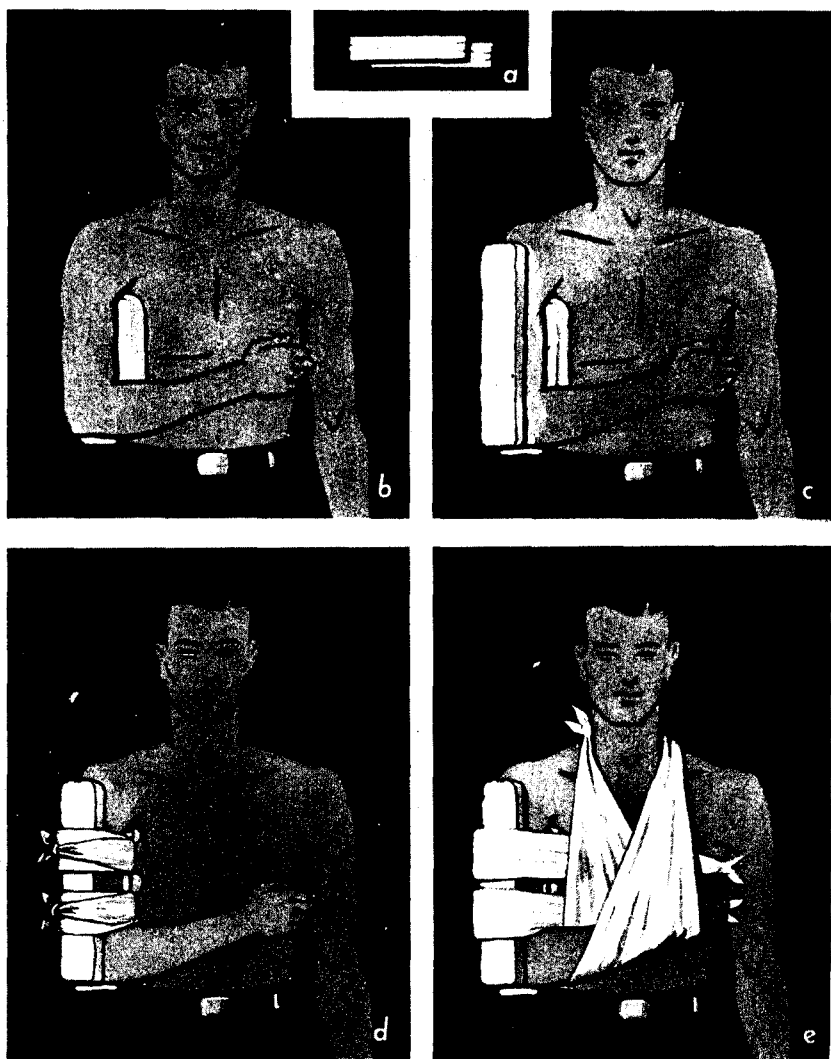


Figure 63

BOARD SPLINT FOR FRACTURE OF ARM (Humerus) (fig. 63)

(a) Two pieces of board used for splints. (Padding not shown for clarity, but *all splints must be padded.*)

(b) Place pad in armpit to protect blood vessels and nerves from undue pressure. Then place padded board between arm and chest wall.

(c) Place another padded board on opposite side of arm.

(d) Secure padded boards in position with triangular bandages folded as cravats, as shown, or with strips of roller bandage.

(e) Splinting completed, forearm placed in sling at wrist.

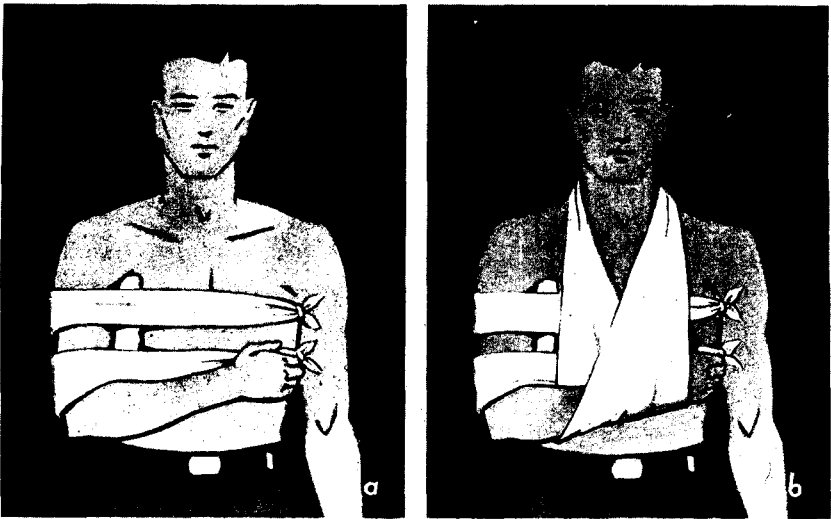


Figure 64

CHEST WALL AS SPLINT FOR FRACTURE OF ARM (*Humerus*)
(fig. 64)

(a) Place pad under arm against chest wall. Then fix arm to chest wall, using triangular bandages folded as cravats (as shown), or with strips of roller bandage.

(b) Splinting completed, forearm placed in sling at wrist.

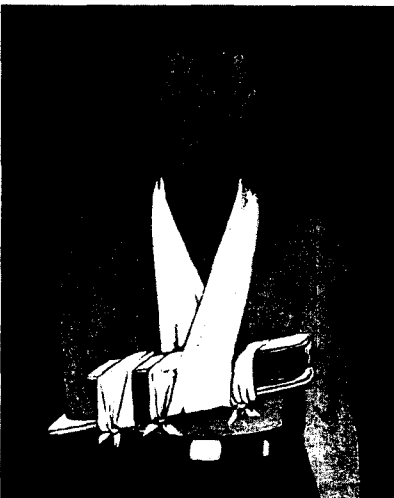


Figure 65

BASSWOOD SPLINT FOR FRACTURE OF FOREARM, WRIST, OR HAND (fig. 65)

Place padded splints in position shown and secure with triangular bandages folded as cravats (as shown) or with roller bandages. Splinted arm placed in sling. Note that level of hand is several inches above level of elbow. (Padding omitted in illustration for clarity.)

STICK SPLINT FOR FRACTURE OF FOREARM OR WRIST (fig. 66) Padded sticks are placed in position shown. Proceed as in previous illustration making certain that sticks are wide enough and are padded. (Padding omitted in illustration for clarity.)



Figure 66

COAT FLAP USED AS SLING (fig. 67) Open all coat buttons except top one, and bring front flap up over injured arm. Secure with safety pin to coat at upper chest.

SHIRT TAIL USED AS SLING (fig. 68) Open lower three buttons of shirt, and bring front shirt tail up over injured arm. Fold back edge of shirt tail for about 1 or 2 inches and secure with safety pins to shirt at upper chest.



Figure 67



Figure 68

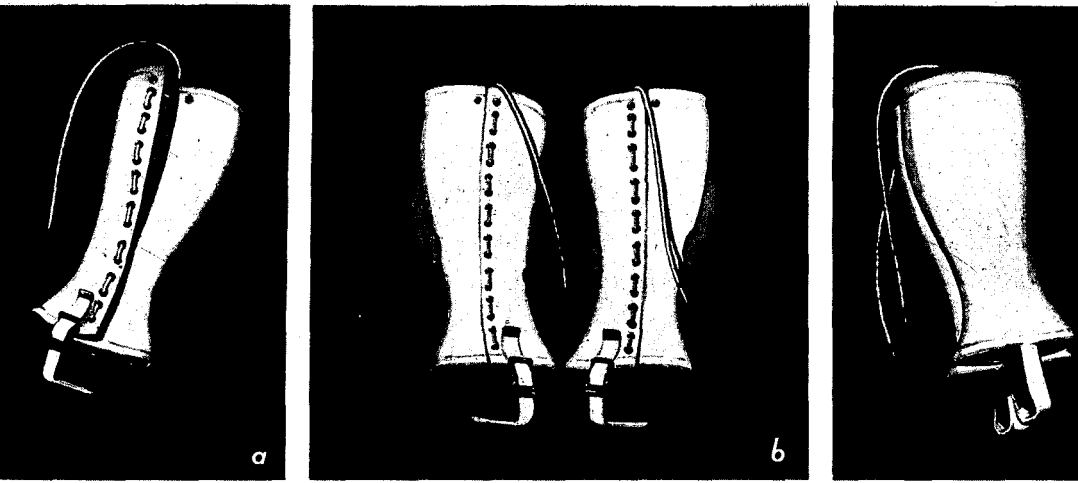


Figure 69

IMMOBILIZING HEAD FOR TRANSPORTATION OF PATIENT
WITH BROKEN NECK (cervical fracture) (fig. 69)

- (a) Soldier's legging, laced with ends of laces out.
- (b) Hold leggings, one in each hand, with laced sides up.
- (c) Place laced sides against each other, with ends of laces hanging free.
- (d) Raise collar of shirt to protect neck; bend leggings and place around neck with ankle notch under the chin.



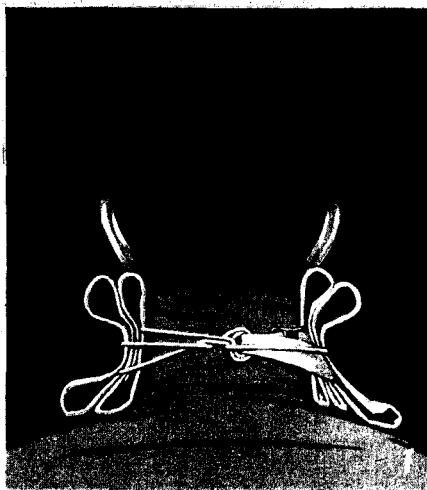
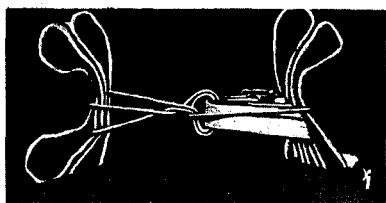
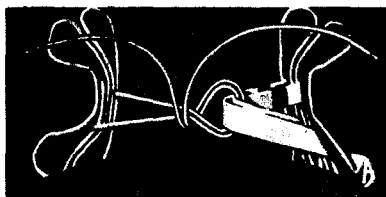
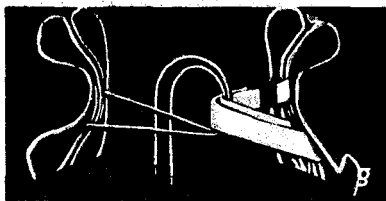


Figure 69



(e) and (f) Loop laces through straps, anchor, and tie in front.

(g), (h), and (i) Loop of lace and strap.

(j) Apply bandage firmly over leggings.

NOTE.—In cases where leggings are not available, the same type of splinting can be accomplished by carefully folding a shirt, field jacket, towel, newspaper, etc., to the desired width and then applying in a manner similar to the leggings.



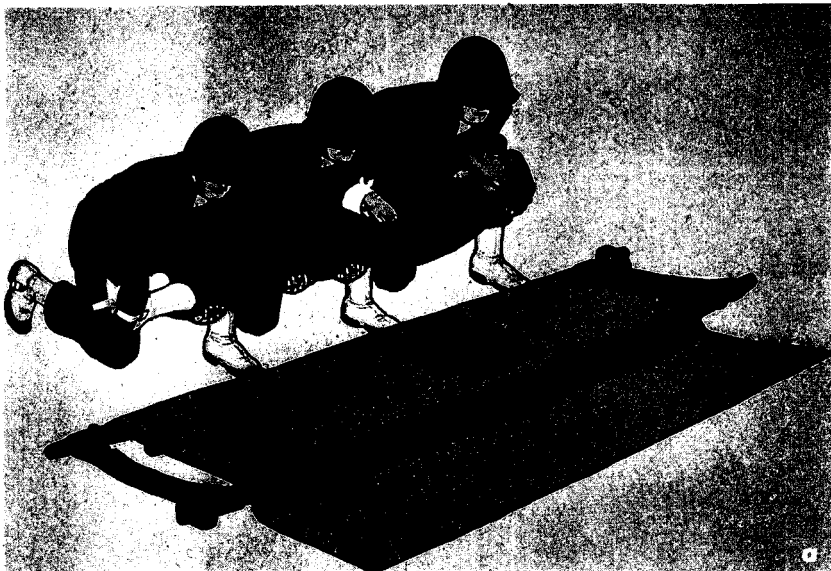
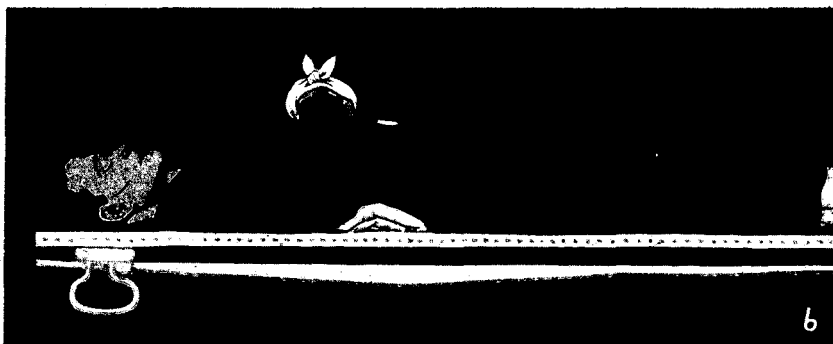


Figure 70

TRANSPORTATION OF PATIENT WITH FRACTURED SPINE (fig. 70) No. 1 man ties hands of patient while litter is being dressed, then places folded blanket on litter in position to support arch of patient's back.

(a) Patient is lifted to litter. No. 2 man places hands under patient's shoulders and controls head; No. 3 places hands under small of back and buttocks; and No. 4 places hands under thighs and calves. All men lean on knee nearest patient's feet and gently lift patient off the ground about 8 inches, then lean forward and lower him to litter.

(b) Shows patient on litter.



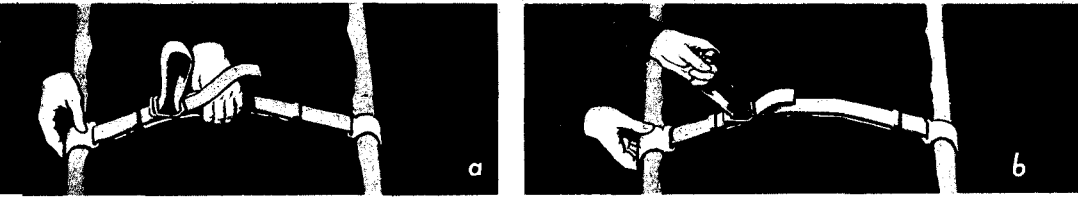


Figure 71

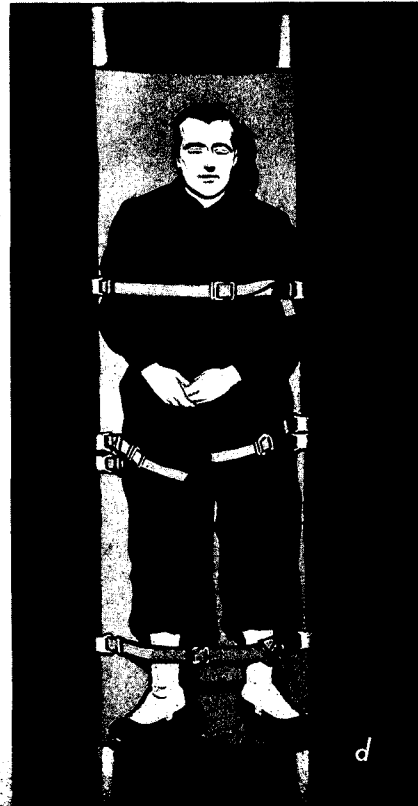
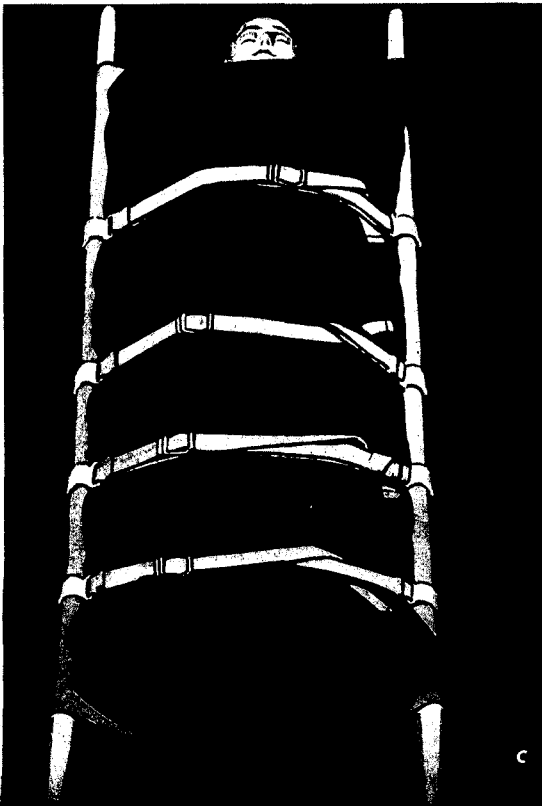
LITTER SECURING STRAP (fig. 71) Used where it is necessary to secure patient to litter. Issued four per litter.

(a) and (b) Show method of tightening strap. **Caution:** Strap should be taut, but not tight enough to be painful or restrict circulation.

(c) Shows four straps in place over blanket. The four straps may be applied one across the chest, one across the waist, one across the thighs, and one across the legs below the knees.

(d) Shows another method of using four straps.

NOTE.—Whenever litter securing straps are used, care must be taken that the strap is so placed as not to interfere with whatever wounds may be present. If the patient suffers a broken leg which has been splinted, straps are passed over only the uninjured leg, since the litter bar will serve to hold the leg in position.



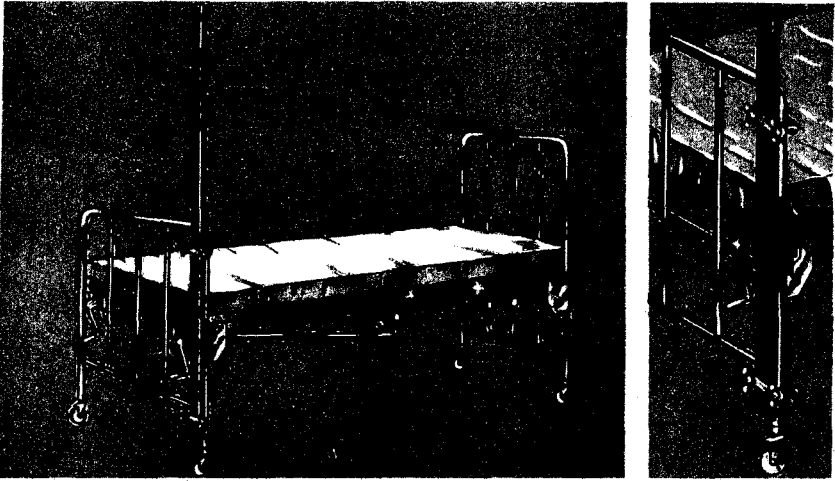
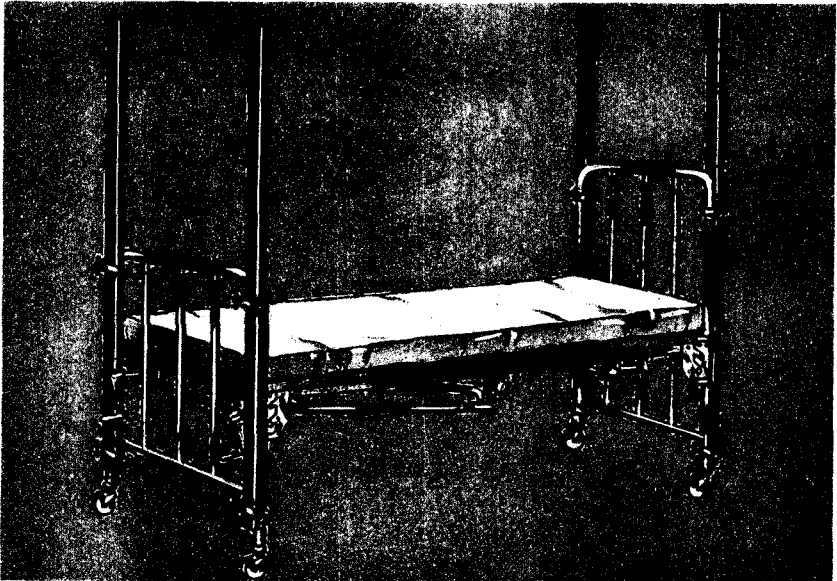


Figure 72

BALKAN FRAME (fig. 72) Used for suspension and traction of the extremities, or overhead support.

- (a) One vertical support in place.
- (b) Method of securing vertical support with clamps. Note butterfly nuts are on outside of bed.
- (c) Four vertical supports in place.
- (d) Four vertical supports in place and two horizontal bars erected.
- (e) Completed frame with side extension and trapeze bar.



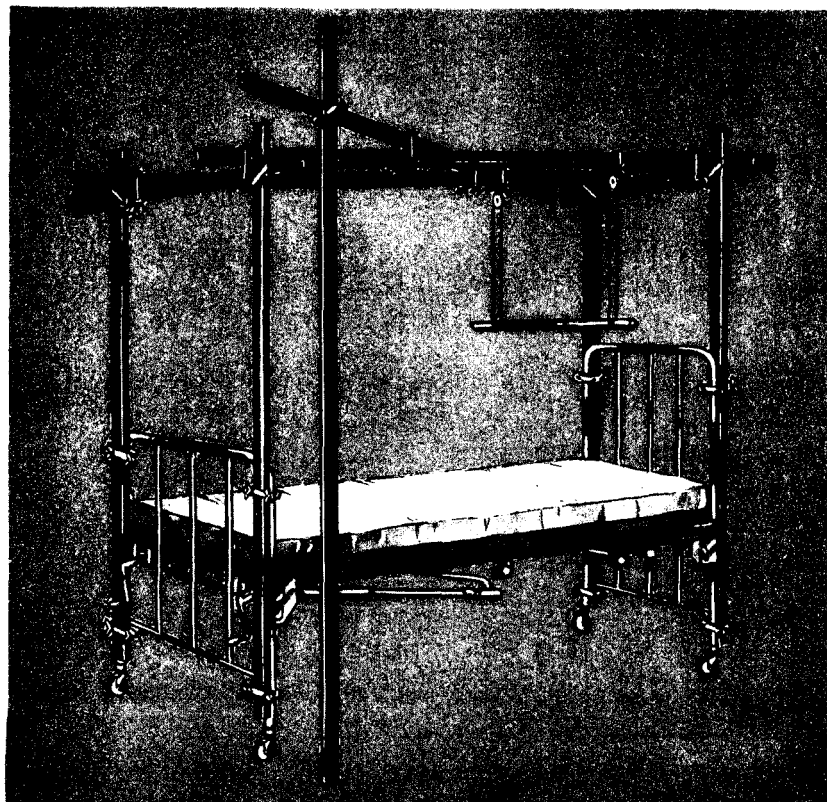
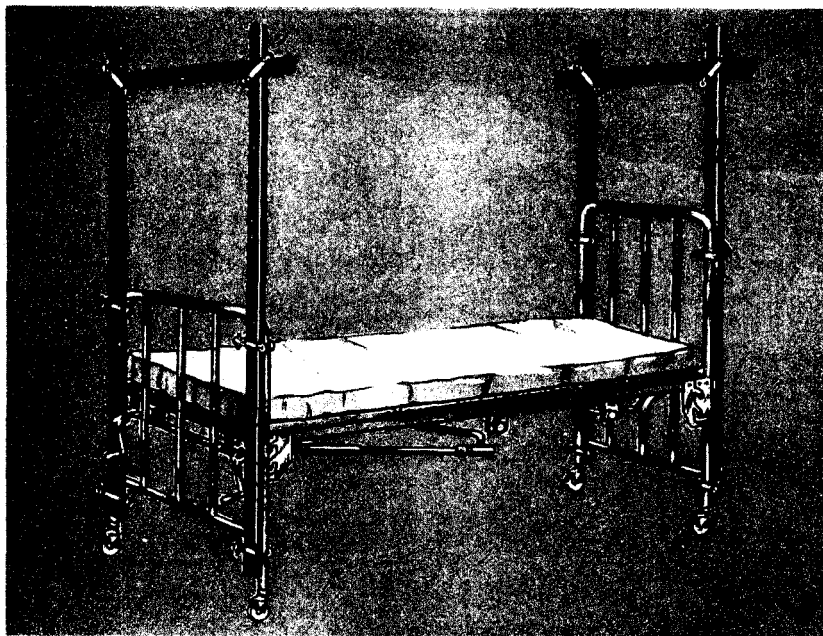
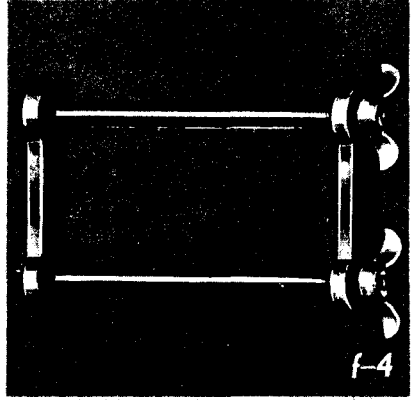
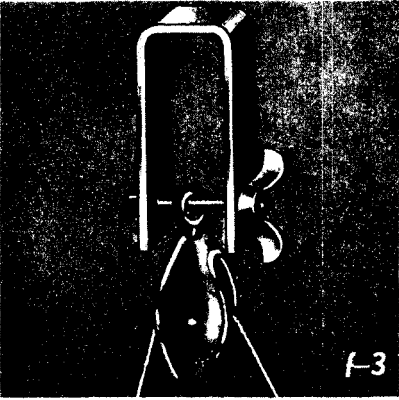
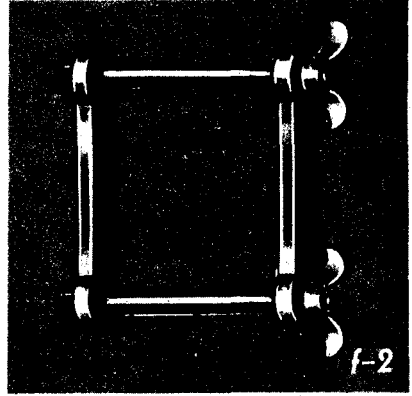
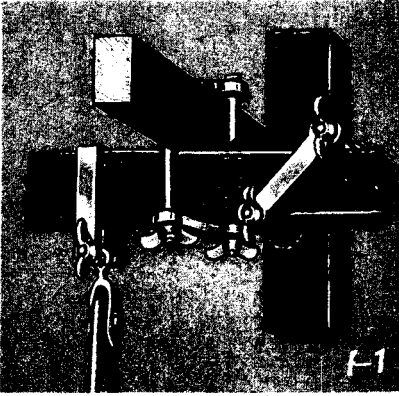


Figure 72



(f) Clamp details.

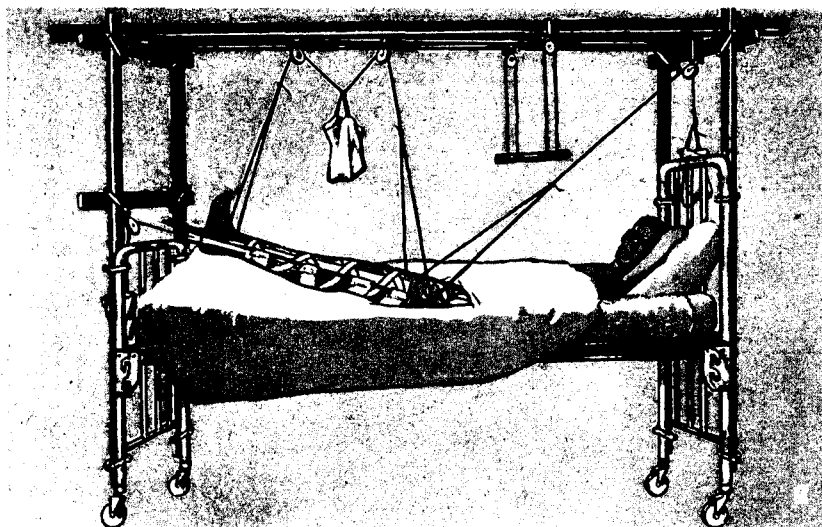
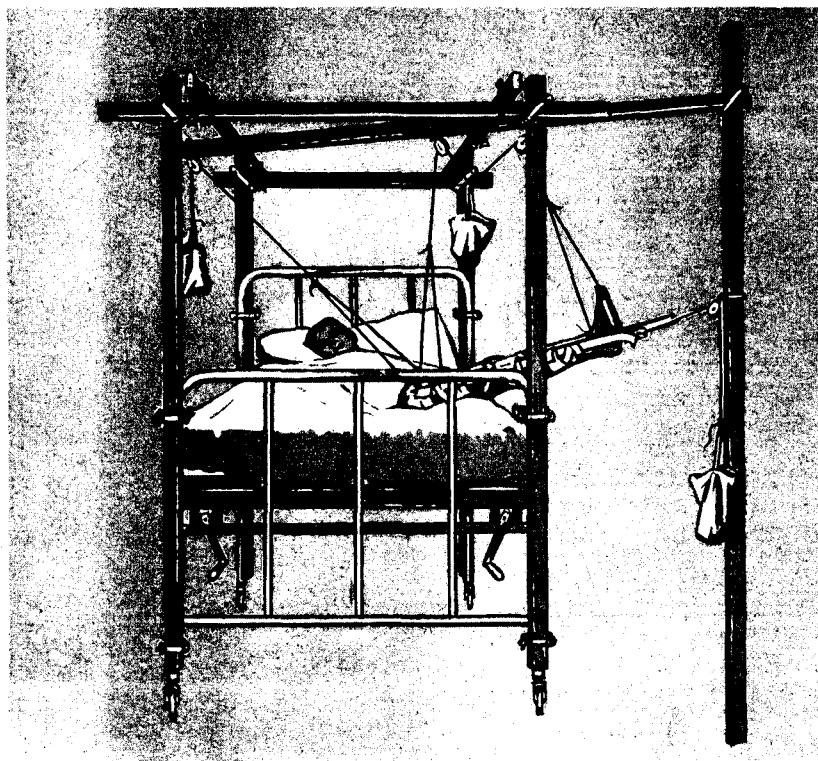


Figure 72

(g) Bed, frame and patient—Army leg splint in traction.

(h) Bed, frame and patient—Army leg splint. Thigh in abduction.



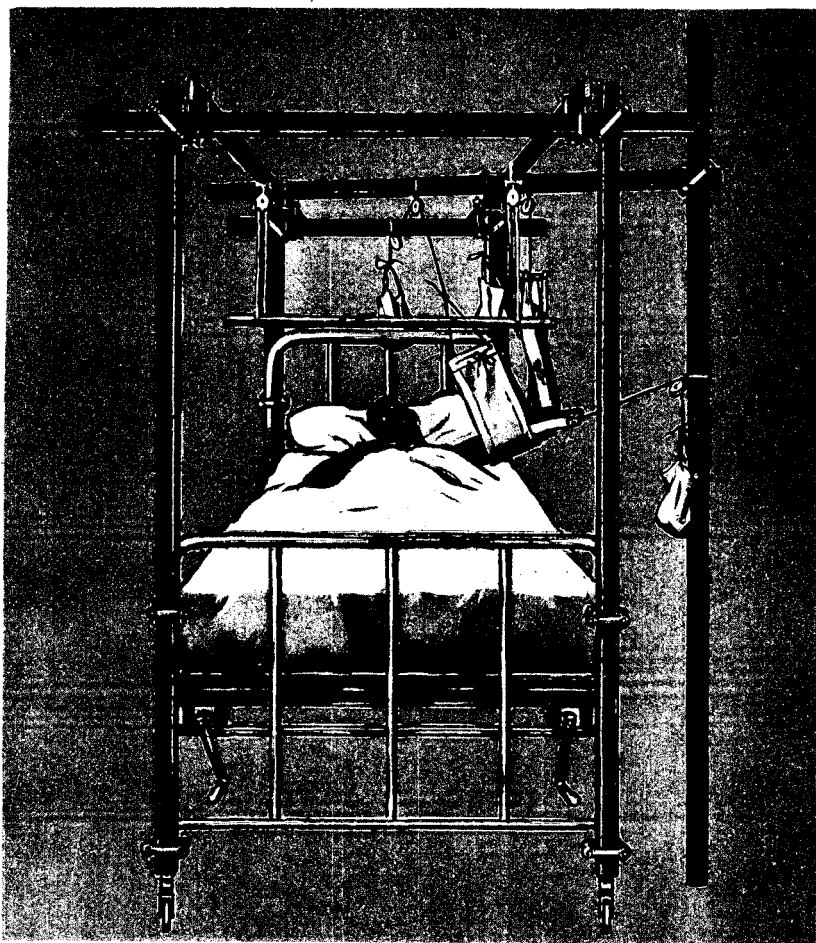


Figure 72

(i) Bed, frame and patient—Fracture of upper extremity.

	Page		Page
Angle hitch using cravat or roller bandage	53	Fractures, splinting	44
Using two cravats	54, 55	Hand, complete bandage of	35
Arm, board splint for fracture of	61	Cravat of palm of	17
Sling, triangular	8, 9	Demigauntlet	34
Spiral reverse of	32	Figure-of-eight of	31
Splint (Thomas-hinged)	58-60	Gauntlet	35
Back, triangle of	10	Triangle of	16
Bandage, plaster of paris	40	Head, recurrent bandage of	22, 23
Bandages, roller	19	Cravat of (or ear)	4
Anchoring	20	Triangle of forehead or scalp	7
Fastening	21	Hip, triangle of	12
Making	19	Jaw, bandage of	26
Removing	21	Cravat of	5
Rules for bandaging with	19	Four-tailed bandage of	27
Sizes	19	Knee, cravat of	13
Triangular and Cravat	3	Leg, cravat of	14
Folding for storage and shipment	18	Leg splint (army hinged, half-ring)	45
Bandaging:		Litter securing strap	67
Basic material	2	Neck, broken, immobilizing head of patient with	64, 65
Types of bandages	2	Nose, four-tailed bandage of	27
Balkan frame	68-72	Oblique bandage	33
Barton bandage	26	Scalp, triangle of forehead or	7
Chest or back, triangle of	10	Shoulder, spica of	28
Chest wall used as splint	62	Triangle of	11
Clavicle, figure-of-eight of	29	Shoulder-arpit, cravat of	10
Velpeau	30	Sling, coat flap	63
Dressings	42, 43	Shirt tail	63
Improvised	42	Triangular arm	8
Elbow, cravat of	12	Spine, fractured, transportation of patient with	66
Figure-of-eight of	34	Spiral bandage	33
Front of, bandage	32	Splint, arm	62
Eye, crossed bandage of	24, 25	Basswood	62
Cravat of	6	Board	61
Finger bandage	36	Chest wall	62
First-aid packet	43	Leg	45-52
Foot, figure-of-eight of, with heel exposed	39	Stick	63
Spica of	38	Wire ladder	57
Triangle of	15	Splinting fractures	44
Forearm, figure-of-eight of	31	Stump, recurrent bandage of	37
Forehead or scalp, triangle of	7	Velpeau bandage	30